EFFECTIVENESS OF YOGAASANA ON BLOOD GLUCOSE LEVEL AMONG CLIENTS WITH TYPE II DIABETES MELLITUS AT SELECTED COMMUNITY, SALEM

By

Mrs. RAJESWARI.S

Reg. No: 30109434

A DISSERTATION SUBMITTED TO

THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI,

IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE

DEGREE OF MASTER OF SCIENCE IN NURSING

(COMMUNITY HEALTH NURSING)

APRIL - 2012

CERTIFICATE

Certified that this is the bonafide work of **Mrs. S.RAJESWARI,** final year M.Sc. (Nursing) student**,** Sri Gokulam College of Nursing, Salem, submitted in partial fulfilment of the requirement for the Degree of Master of Science in Nursing to The Tamilnadu Dr. M.G.R. Medical University, Chennai, under the Registration No.**30109434.**

College Seal:

Signature: **…….**

Prof. Dr. A. JAYASUDHA, Ph.D (N).,

PRINCIPAL,

SRI GOKULAM COLLEGE OF NURSING,

3/836, PERIYAKALAM,

NEIKKARAPATTI,

SALEM - 636 010.

EFFECTIVENESS OF YOGAASANA ON BLOOD GLUCOSE LEVEL AMONG CLIENTS WITH TYPE II DIABETES MELLITUS AT SELECTED COMMUNITY, SALEM

Approved by the Dissertation Committee on: …….

Signature of the Clinical Specialty Guide: ……..

Mrs. J. KAMINI CHARLES, M.Sc.(N), Ph.D.,
Associate Professor and Head of the Department,
Department of Community Health Nursing,
Sri Gokulam College of Nursing,
Salem - 636 010.

Signature of Medical Expert: **……..**

Dr. P.ALAGIYANAMBI, M.D.,
Consultant, Diabetalogist,
Sri Gokulam Hospital,
Salem-636 010.

…… **……...**

Signature of the Internal Examiner with date

Signature of the External Examiner with date

ACKNOWLEDGEMENT

First of all, I would like to say thanks to **God Almighty**, for giving me the strength and health to do this research study. He is the source and inspiration in every walk of my life and the foundation of knowledge and wisdom.

I wish to express my deep sense of gratitude and thanks to **Dr.K.Arthanari,M.S.,** Managing Trustee Sri Gokulam College of Nursing for the facilities he had provided in the institution which enabled me to do this study.

I would like to put across my heartfelt credit to **Prof.Dr.A.Jayasudha,Ph.D(N).,** Principal, Sri Gokulam College of Nursing, for her full support throughout this study.

I would like to extend my heartfelt thanks to **Prof.Dr.K.Tamizharasi,Ph.D(N).,** Vice Principal, Sri Gokulam College of Nursing, for her full support throughout this study.

I feel proud to thank my guide **Mrs. J.Kamini Charles, MSc.(N)., PhD,** Associate Professor and HOD of Community Health Nursing Department, Sri Gokulam College of Nursing, for her excellent suggestions, valuable guidance, kind support, ever willing help from time to time, untiring and patient correction which helped me to bring this study a flourishing one.

I express my sincere gratitude and thanks to **Dr.P.Alagiyanambi, M.D,** Consultant Diabetologist, Sri Gokulam Hospital, Salem for his professional guidance and support throughout the study.

I deeply extent my special thanks to **Dr.A.M.Sudhakaran,** Yoga Expert for his commendable work in yogaasana practice for this research study.

I extend my sincere gratitude to class coordinator **Mrs.P.Lalitha Vijay, M.Sc(N),** Professor and HOD of Mental Health Nursing Department, for her constant support and valuable guidance towards this study.

I am greatful to the **Medical** and **Nursing Experts** for validating the tool and content used in this study.

I broaden my honest recognition to all the **Faculty Members** of Sri Gokulam College of Nursing, and special thanks to **Mrs.S.Rajeshwari, M.Sc(N)., Mrs.G.Jayanthi, M.Sc.(N)., Ms.D.Akila, M.Sc.(N).,** and **Mrs.A.Ramya, M.Sc.(N).,** Lecturers of community health nursing department for their valuable guidance during the course of this study.

I widen my genuine gratitude to the **Dissertation Committee** for offering constructive criticism and due sanction for carrying out this research study.

I express my special thanks to the librarian, **Mr.P.Jayasheelan, M.Sc.,** for his helping hands in providing all needed literature to complete this research study.

I whole heartly thank the **Clients** who willingly agreed to cooperate during data collection period without them it would have been impossible to complete this study.

I render my deep sense of thanks to **Dr.M.Dharmalingam M.Sc., M.Phil.,Ph.D.,** Biostatistician for his well-timed and opportune aid and backing in statistical analysis and presentation of data.

I am thankful to **Mr.Muthusamy, M.A, M.Ed.,(Eng)** whose editing suggestions and practice sense of language were decisive towards the completion of this dissertation.

I extent my warmest thanks to **Mr.V.Murugesan,** Shri Krishna computers who has helped me to print this dissertation with technical perfection and a complete success.

I express my sincere thanks to **Mr.Thoppa Gounder** and **Mr.Kasiraja,** Chairmans of Idappadi and Jalagandapuram Community, Salem for this kind cooperation towards this research study.

Life has blessed me with an understanding, foresighted and value oriented husband in the person of **Mr.S.Meganathan,** who persuaded me to pursue postgraduate studies. For his supportive presence all along I am ever grateful to him.

I extend my warmest thanks to dear **friends Ms.T.Priya, Ms.P.Sasikala, Mr.G.Nethaji,** for their help during this course and especially during this study. Without them, this study would not have been fruitfully done.

I extent my sincere thanks to my parents **Mr.S.Sengottaiyan, Mrs.S.Lakshmi and Mrs.S.Ramathilagam,** for them constant support.

I render my due thanks to all who helped me directly and indirectly to complete this study.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ANNEXURES

ABSTRACT

A study was conducted to evaluate the effectiveness of yogasana on blood glucose level among clients with type-II diabetes mellitus. A quantitative evaluative approach with quasi experimental pre test and post test research design was used. Through Non-probability convenience sampling technique, 60 clients were selected, among them 30 clients from Idappadi community for experimental group and 30 clients from Jalagandapuram community for control group were assigned. On the first week pretest on blood glucose was done by using digital glucometer for both groups. On the same day, the investigator had demonstrated yogaasana only to the experimental group. The clients of experimental group practiced yogaasana along with the investigator, twice daily for 21 days. The duration for yogaasana was one hour. Posttest was done after 21 days. The collected data were analyzed using descriptive and inferential statistics.

Findings revealed that, in experimental group during pretest 9(30%) had moderate hyperglycemia, 7(23.33%) had mild, severe and very severe hyperglycemia. In control group 9(30%) are severe and very severe hyperglycemia, 8(26.67%) had moderate hyperglycemia, 4(13.33%) had mild hyperglycemia. In experimental group during post test 16(53.33%) had mild hyperglycemia, 7(23.33%) had severe hyperglycemia, 6(20%) had moderate hyperglycemia, 1(3.33%) had very severe hyperglycemia. In control group 11(36.67%) had very severe hyperglycemia, 8(26.67%) had severe hyperglycemia, 7(23.33%) had moderate hyperglycemia and 4(13.33%) had mild hyperglycemia. In experimental group the pretest mean score was 2.46±1.16 and post test mean score was 1.76 ± 0.93 with the mean difference of 0.7. In control group the pretest mean score was 0.76±1.04 and post test mean score was 2.86 ±0.97 with the mean difference of – 0.1. The‘t’ value was 5.41.Hence hypothesis H_1 was retained at $P<0.05$ level. The chi-square test revealed that in both groups, there was a significant association between the pretest blood glucose level and their selected background variables like sex (8.06), (11.37), educational status (36.42), (31.464) and in duration of taking treatment (13.94) only in experimental group. Hence hypothesis H_2 was retained for these mentioned variables at $P<0.05$ level. It shows that yogaasana was an easy and inexpensive method to reducing blood glucose level.

CHAPTER I

INTRODUCTION

"Yoga is like music, the rhythm of the body, the melody of the mind and the harmony of the soul, create the symptoms of life"

Health is a basic need that determines wealth and happiness of an individual. It is essential for the satisfaction of basic human needs. Each and every individual wants to lead their life without illness. Every person is free to live according to his own ways. Sometimes the people adopt many irregular ways of living that they do not understand the value of health until it is lost. The changing life style and technological advancement have paved the way for emergence of various disorders. Diabetes mellitus is one among such disorder. **(Lakhwinder Kaur, 2009)**

According to **WHO, 2002,** Diabetes is a major threat to global public health that is getting worse day by day and the biggest impact is on adult of working age in developing countries like India. The statistical report reveals that 7% of world's adult population is affected by diabetes and this number is likely to be double by 2030.

Diabetes is now emerging as king of all diseases for reasons such as multisystem involvement complex metabolic abnormalities and varied clinical presentation. In cause substantial morbidity and mortality primarily through cardiovascular, eye and kidney diseases as well as limb amputation. **(Vadivukkarasi Ramanadin,2010)**

The International Diabetes Federation (IDF) estimates the total number of diabetic subject to be around 40.9 million in India and this is further set to rise to 69.9 million by the year 2025.

Majority of the studies in the western part of India have been conducted in Mumbai and Ahmadabad as shown in table 3 regarding urban prevalence, an

increasing trend is observed, which has escalated from 1.5% (1963) to 9.3% in Mumbai (2001). A similar trend is observed in the rural areas - an increase from 3.9% in 1991 to 9.3% in 2006.

The sequelae of diabetes or complications are responsible for reduction in the life expectancy of diabetic patients by about one third. The complications are neuropathy, retinopathy, arteriosclerosis, nephropathy, digestive disorders, oral complications and increased susceptibility to infections. **(Rob Ilicks, 2006)**

American Diabetic Association (2008) recommended the importance of dietary supervision. The study shows that the subjects who received a year of dietary supervision showed significant improvements in a number of areas closely liked to diabetes including insulin resistance, fasting blood glucose, triglycerides and cholesterol.

Need for the Study

Diabetes afflicts a human when his or her glucose level in blood shoots up. Our organ, pancreas produces insulin, a hormone that breaks down the glucose, allows body cells to absorb it, and in the process, energizes our body. When insufficient insulin is produced due to the deterioration of the beta cells of the Pancreas, the glucose or sugar that is ingested cannot be broken down, resulting in accumulation of glucose in blood. The disease is termed as diabetes or diabetes mellitus. It is mainly of three types: Type 1 is caused due to poor production of insulin, Type 2 is caused due to cell growing inert or non-responsive to insulin and the third type, Gestational diabetes attacks women during pregnancy. **(Elvira Filinovich)**

Aparna kuna, Spandana,S and Poshadri. A, (2010) says the incidence of diabetes mellitus is increasing all over the world and is becoming a problem of significant importance. The World Health Organization (WHO) has declared India as

a diabetic Capital of the World. Globally diabetes affects 246 million people, which is about 6% of the total adult population. It is the fourth leading cause of death by disease and every 10 seconds, a person dies from a diabetes related causes in the world.

According to **WHO in 2010,** at present diabetes affects 246 million people world wide and is expected to affect 380 million by 2025 at the rate of two people every l0 seconds.

Another 7 million people diabetes every year. Every 10 seconds a person dies from diabetes related causes and an estimated 3.8 million death per year are linked directly to diabetes including cardiovascular disease made worse by diabetes related lipid disorders and hypertension. Every 10 seconds two new cases of diabetes are diagnosed. Statistics related to India reveals that in the year 2000, there were 32 million diabetic patients and it is projected to rise to 80 million by the year 2030. This exploding epidemic has made India. **"World Diabetes Capital".**

The Prevalence of Diabetes in India Study (PODIS) was carried out in 108 centers (49 urban and 59 rural) in different parts of India to look at the urban-rural differences in type 2 diabetes and glucose intolerance in the year 2004.

The first study done in South India was at Vellore in 1964. This hospital based study done on 63,356 individuals showed a prevalence of 2.5%. The early signs of the looming diabetes epidemic were seen in the study conducted in Hyderabad in the year 1966, which reported a high prevalence of 4.1%. However, the studies in rural areas were conducted since 1972. In 1984 house to house surveys were conducted in individuals aged 15 years and above in Tenali, a small town in Andhra Pradesh (urban) and rural population of Pondicherry (now Puducherry), which reported a prevalence 4.7% and 1.8% respectively.

The earliest documented study on prevalence of diabetes in eastern of India was a hospital of diabetes in eastern region of India was a hospital based study done in Calcutta in 1938. There are very few epidemiological studies from this part of the region, which gave looked at the prevalence of diabetes. The studies conducted have been done in metros alone or only in small towns or villages . the epidemiological studies done in this part of India [18,44,45]. The prevalence of diabetes in urban areas has increased from 2.3% in 1975 to 11.7% in the year 2001. **(Singh et.al, 2001)**

Twenty type II diabetic subjects between the age group of 30-60 years were studied to see the effect of 40 days of yogaasanas on the nerve conduction velocity. The duration of diabetes ranged from 0-10 years. Subject suffering from cardiac, renal and proliferative retinal complications were excluded from the study yogaasana included suryanamskar. Tadasan, konasan, padmasan pranayam, pacschimottansan ardhmatsyendrasan, shavasan, pavanmukthasan, sarpasan and shavasan. Subjects were called to the cardio respiratory laboratory in the morning time and were given training by the yoga expert. The yoga exercises were performed for 30-40 minutes every day for 40 days in the above sequence. The subjects were prescribed certain medicines and diet. Yogaasana have a beneficial effect on glycaemic control and improve nerve function in mild to moderate type II diabetes with sub-clinical neuropathy. **(Malhotra. V, et.al., -2002)**

The Purpose of conducting yogaasana related studies is to improve its practice. Today scientists and yoga therapist are rediscovering the effectiveness of yogaasana on blood glucose treatment and the investigator also wished to promote its acceptance and practice in order to reduce the blood glucose effectively. Thus the investigator decided to conduct this study.

Statement of Problem

"A Study To Evaluate The Effectiveness Of Yogaasana On Blood Glucose Level Among Clients With Type II Diabetes Mellitus At Selected Community, Salem."

Objectives:

1. To assess the level of blood glucose among clients with type II diabetes mellitus in experimental and control group.
2. To determine the effectiveness of yogaasana on blood glucose level of clients with type II diabetes mellitus in experimental group.
3. To find out association between the pretest blood glucose level among clients with type II diabetes mellitus and their selected background variables in experimental and control group.

Operations Definitions

Effectiveness:

It refers to the significant effects on blood glucose and determined by the differences between posttest score in experimental and control group.

Yogaasana:

Yogaasanas are techniques to bring about very deep rest to different parts of body. The suggested asanas for diabetes such as, cooling Pranayama, standing asanas like Padhahasthasana, Ardha chakrasana, sitting asanas like Paschimotasana, Ardha matsyendrasana, supine position Pavanamukthasana, prone position Bhujangasana, Shalabhasana and relaxation technique of Savasana.

Blood glucose:

According to the current definition two fasting glucose measurements above 125 mg/dl (7.0 mmol/L) is considered diagnostic for diabetes mellitus people with

fasting glucose level from 100 to 125 mg/dl (5.6 to 6.9 mmol/ L) are considered to have impaired fasting. **(WHO Diabetes Criteria, 2006)**

Type-II Diabetes mellitus:

Type II diabetes mellitus is a non-autoimmune, complex, heterogeneous and polygenic metabolic disease condition in which the body fails to produce enough insulin, characterized by abnormal glucose homeostasis **(Gupta, et.al, 2008)**. Its pathogenesis appears to involve complex interactions between genetic and environmental factors **(Gupta, et.al, 2008).** Type II diabetes mellitus when impaired insulin effectiveness (insulin resistance) is accompanied by the failure to produce sufficient β-cell insulin. **(Permutt, et.al, 2005)**

Clients with Type-II Diabetes Mellitus:

Clients diagnosed to have type-II diabetes mellitus and receiving oral hypoglycemic agents at the time of study.

Assumption:

1. Yogaasana will be effective intervention for clients with type-II diabetes mellitus.
2. Blood glucose differs in each client with type II diabetes mellitus.

Hypotheses:

H_1: There will be a significant difference between the pretest and posttest level of blood glucose among clients with type-II diabetes mellitus in experimental and control group after yogaasana at $p \leq 0.05$ level.

H_2: There will be a significant association between the pretest blood glucose level among clients with type-II diabetes mellitus and their selected background variables in experimental and control group at $p \leq 0.05$ level.

Delimitations:

1. The study was limited to diagnosed clients with type-II diabetes mellitus at selected community, Salem.
2. The period of data collection was limited to 4 weeks.
3. Sample size was limited to 60 samples.

Projected outcome:

1. This study would help to evaluate the effectiveness of yogaasana on blood glucose among clients with type-II diabetes mellitus.
2. This finding of the study would help the nurse to understand the importance of yogaasana in controlling blood glucose in clients with type-II diabetes mellitus in hospital and community setup.
3. The study would improve knowledge of clients with type-II diabetes mellitus about yoga therapy in experimental group.

Conceptual Framework:

The conceptual framework adapted for the study was based on Rosenstoch's Health Belief Model (1974). Health Belief Model provides a way of understanding and predicting how clients behave in relation to the health and how they will comply with health care therapies.

Individual Perception:

Perceived seriousness:

Type-II diabetes mellitus client feels uncomfortable with blood glucose which is affecting their health status.

Modifying factor:

Factors that modify a person's perception include the following,

Background variables:

It consists of age, sex, education, family history, occupation, dietary pattern, duration of disease and duration of drug therapy and taking diabetic diet.

Cues to action:

Demonstration of yogaasana to clients with type-II diabetes mellitus in experimental group.

Likelihood of action:

The likelihood of action involves the person's perception of the benefits of taking action. Here, the clients in experimental group perceived that there was reduction in the blood glucose level and yogaasana also they expressed willingness to practice.

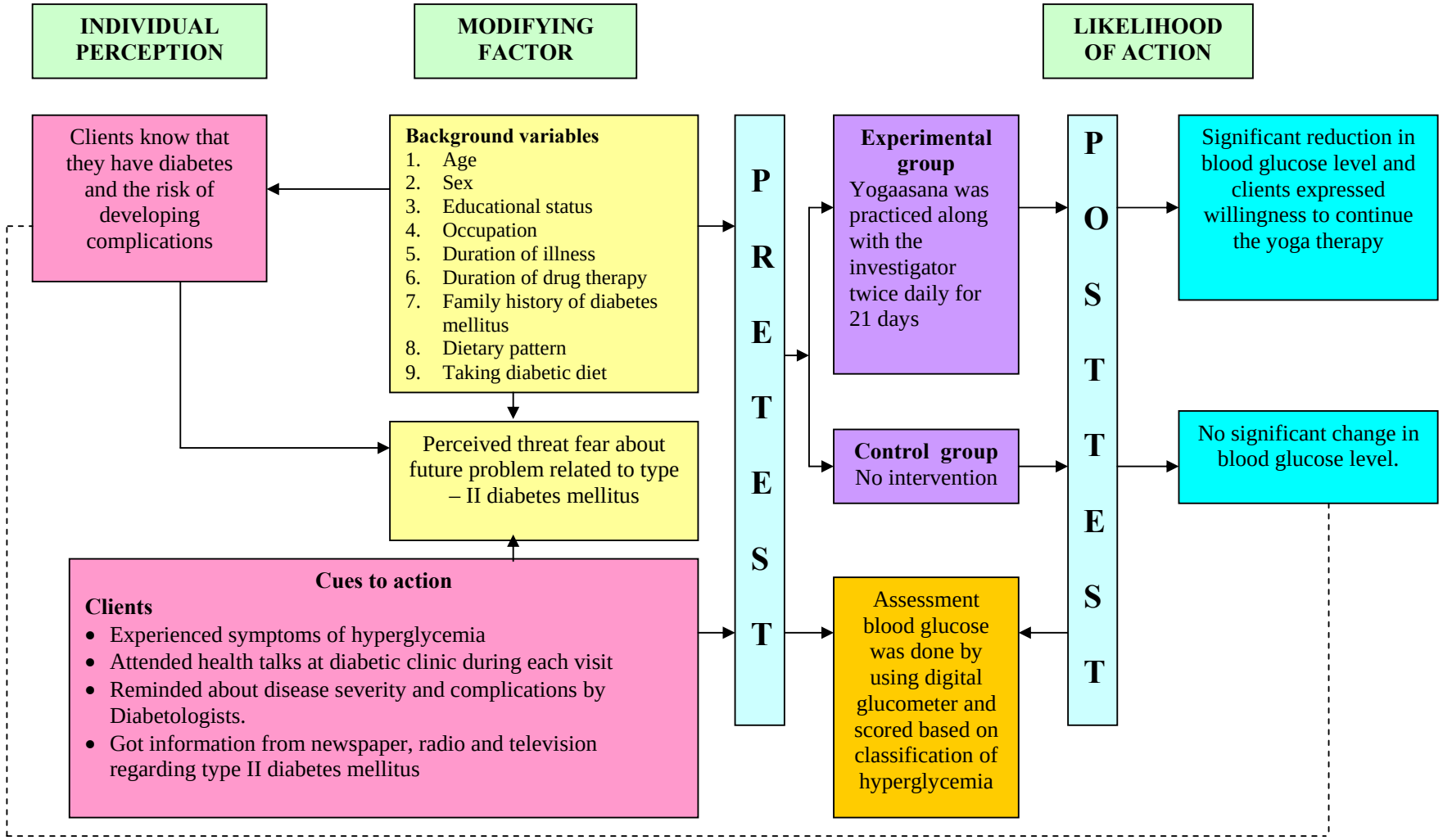


Figure-1.1: CONCEPTUAL FRAME WORK BASED ON ROSENSTOCH'S HEALTH BELIFE MODEL (1974)

Summary

This chapter dealt with Introduction, Need for the study and Statement of the Problem, Objectives, Operational definition, Assumption, Hypotheses, Delimitation, Projected outcome and Conceptual framework.

CHAPTER II

REVIEW OF LITERATURE

This chapter presents an overview of relevant research material on yogaasana of clients with type II diabetes mellitus. The related literature is presented under the following headings.

Section-A: Literature related to type II diabetes mellitus.

Section-B: Literature related to effectiveness of yoga asana on type II diabetes mellitus.

Section-A: Literature related to type II diabetes mellitus

Usha.v.k, Lalitha.K (2011) conducted a study on physical problems among senior citizens. A systematic random sampling technique was used to retrieve 100 respondents women (n=63) and men (n=37) of age 65 years. The pre-designed questionnaire was used as tool the results focused that majority of the male senior citizens (32.4%) suffered from diabetes mellitus whereas females (34.9%) suffered from hypertension. In mean score was 9.84$\pm$3.26 for male and 8.03$\pm$3.31 for female. Statistical significance found that, 't' value was 2.648 at $p>0.05$ level.

Kernap Sarabai. L.(2011) conducted a study to assess the effectiveness of roasted fenugreek seed powder on NIDDM clients with 51-60 years of age. The quota sampling technique was used. The sample size was 40. Samples are assigned as experimental and control group. Pretest blood glucose level was checked in both groups. The investigator administered 24 grams of roasted fenugreek seed powder for 15 days to experimental group. The results found the pretest fasting blood sugar mean score 139.7+29.24 was less than the post test fasting blood sugar 155.7+33.28 with the mean difference was 16 at 't' value 7.57 at $p=0.01$ level. This result aid in reduced of blood sugar on NIDDM.

According to World Health Organisation, (2009) Type II diabetes mellitus is common and life threatening metabolic disorder. It is estimated that 220 million persons are diabetes on World wide. It is expected to raise 366 million by 2030.

Serena Tonstad, et.al., (2009) was conducted a study to assess the prevalence of type II diabetes mellitus among clients. Population of the study comprises of 22,434 men and 38,469 women. Data was collected self reported demographic, anthropometric, medical history and lifestyle data from 7th Day Adventist church members across North America. The type of vegetarian diet was categoriesed based on a food frequency questionnaire. The results shows that, the calculated odds ratios (Ors) and 95% CIs using multivariate-adjusted logistic regression. Mean BMI was lowest in vegans (23.6 kg/m^2) and incrementally higher in lacto-ovo vegetatirans (25.7 kg/m^2), pesco-vegetarians (26.3 kg/m^2), semi-vegetarians (27.3 kg/m^2) and nonvegetarians (28.8 kg/m^2). Prevalence of type II diabetes increased from 2.9% in vegans to 7.6% in non-vegetarians; the prevalence was intermediate in participants consuming lacto-ovo (3.2%), pesco (4.8%), or semi-vegetarian (6.1%) diets. After adjustment for age, sex, ethnicity, education, income, physical activity, television watching, sleep habits, alcohol use, and BMI, vegans (OR 0.51 [95% CI 0.40-0.66]), lacto-ovo vegetarians (0.54 [0.49-0.60]), pesco-vegetarians (0.70 [0.61-0.80]), and semi-vegetarians (0.76 [0.65-0.90]) had a lower risk of type II diabetes than nonvegetarians.

Balaji.A. (2009) was conducted a study regarding quality of care amonge type II diabetes mellitus patients residing in an urban slum. The samples were with 35 years and above age group based on community based cross sectional study. A total of 323 samples were interviewed by busing a questionnaire which was developed based on National diabetes quality improvement alliance (NDQID) performance

measurement set. Most of the adults 192(59.4%) were diagnosed as type II diabetes in last 5 years and 210(65%) of the adults seeked treatment in the government hospital. The chi square value 1.5 at p>0.1 level.

Plamen Penev, (2008) conducted a controlled trial study at Chicago university to determine the effects of insufficient sleep on blood glucose level. The population of the study included a group of healthy middle aged with both sex. The period of intervention 14 days. The samples were sedentary living with free food and 5.5 or 8.5 hours sleep. Clients who had unhealthy lifestyle reduced the sleep from 8.5 to 5.5 hours. This shows changes in blood sugar level. It strongly supported unhealthy practice of lifestyle reduce duration of sleep and increased the risk of diabetes and also increased insulin resistance.

Narasigam and Shah,(2007) conducted a comparative study between vanadyl sulfate and glibenlamide. The objective of the study was to assess the blood glucose level. The period of intervention 12 weeks. The results shows that who were taking vanadyl sulfate was more effective to reduce the blood glucose with in the intervention period comparing to glibenclamide.

Ankur Sethi, Saurrabh Srivastava S.V, Madhu, (2007) conducted a study of prevalence and pattern of using indigenous medicines in diabetic patients attending a tertiary care centre. A sample of 113 patients with type I and II was interviewed using a structured questionnaire the result shows that male to female ratio in the present study was 1:3, mean duration of diabetes mellitus was 5.2±2 years. The most important finding of the present study was that 89% of the diabetic patient attending a tertiary care diabetic clinic reported using indigenous medicines. It shows better glycaemic control was suggested by better controlled blood glucose values.

Knoll, et.al.,(2006) conducted a prospective epidemiological study on depression, anxiety. The objectives of the study to assess the risk of type II diabetes. In that two recent meta-analysis had examine among clients with type II diabetes mellitus. This results found that depression increase the risk for type II diabetes by 37%.

Pigman.T, Han.X and Krousel-Wood. A, (2002) conducted a case control study among 300 type II diabetes clients in New Oreland. The objective of the study was to determine the role of exercise in the management of diabetes. The result shows that 92 clients had poor diabetic control (Hba 1c > 1.8) and also the clients who done regular exercises had 2.71 times more diabetic control than client who on irregular exercise and it was significant at P = 0.04 level (odd ratio = 2.71 and confidence interval = 1.38-5.32).

Mooy et.al., (2000) was conducted a cross sectional study to assess reduction between the risk of type II diabetes clients and life events. The sample size was 2,262. The results showed that the person who face significant life event had 1.6 risk of getting diabetes mellitus who had not experienced life event and it was strongly supported by Hoorn study. according to this study the life event was positive associate with waist hip ratio (odds ratio = 1.5(95%) and confidence interval = 0.9-2.4).

Section-B: Literature related to effectiveness of yogaasana on type II diabetes mellitus.

Kosuri. M, Sridhar GP, (2009) conducted a study on yoga practice among diabetes to improve physical and psychological outcomes. The sample size was 35 and the period of intervention was 40 days. The samples were subjected to do yoga during intervention period. The results showed that thee was a significant reduction of Body Mass Index (BMI) 26.514±3.355 to 25.771±3.404 at P<0.001 level and anxiety

6.20±3.72 to 4.29 ± 12.87 at P<0.05 level. The investigator reveals that clients who participated with type II diabetes mellitus to practice yoga for data collection period. it focused that reduced BMI and improved well being and reduce anxiety.

Yang.K, Bernardo L.M, et.al, (2009) conducted a study to determine the effectiveness of yoga program with physical activity, diet in reducing the risk of diabetes mellitus among adult with high risk. The sample size was 23 and the study period was 3 month. The sample were assigned as 2 groups. The group I were subjected to do yoga twice per week and group 2 received education material weekly twice. The findings of the study revealed that the person who undergone yoga programme experienced improved in weight, blood pressure and triglyceride level.

Chaya Ms. Ramakrishna G. Shastry S, et.al., (2008) was conducted a study on insulin sensitivity and cardiac autonomic functions among young male. The objective of the study was to assess insulin sensitivity and cardiac autonomic functions for long term practitioners of yoga. The sample size was 30, samples were assigned as 2 groups. 15 healthy males who practice yoga and 15 healthy male who did not practice yoga. Fasting insulin sensitivity was measured in the fasting state by the hyperinsulinamic-euglycaemic clamp. The result found that fasting plasma insulin was significantly lower in yoga group. It focus yoga group was more insulin sensitive yoga mean score 7.82±2.29 and control group mean score 4.86± 11.97. It was statistically significant at P<0.001 level.

Gordon L.A, Morrison E.Y, MCGrowder. D.A., et.al, (2008) conducted a study to determine the effectiveness of hatha yoga vs conventional physical training on clients with type II diabetes. The sample size was 77, the sample was assigned as experimental group I and II the experimental group I subjected hatha yoga and experimental group II undergone exercise therapy for the period of 6 months. The

result showed that to 29.48% and 27.43% respectively. fasting blood glucose was gradually reduced (29.48%) for the clients who done yoga therapy at P<0.001 level.

Sharma.R, Gupta. N, Bijlani. R.L, (2008) conducted a prospectie control to determine the effect of yoga based lifestyle intervention on subjective well being among young adults. The sample size 77 and the period of intervention 10 days. The objective of the study was explore the short term impact of a comprehension, intervention, based on yoga. On subjective well being levels in normal and diseased clients. Experimental group were assigned normal healthy individuals and group II subjects having hypertension. Coronary artery disease, diabetes mellitus and other illnesses. The outcome measures were subjective well being inventory (SWBI) scores, taken on the first and last day of the courses. The inventory consists of question related to one's feelings and attitude about various areas of life, such as happiness, achievement and interpersonal relationship. The results focused the significant improvement in the subjective well being scores of subjects.

Moolasarn. S, Sripa. S, Kuessirikiet. V, et.al, (2005) conducted a study to assess usage and cost of complementary and alternative medicines in diabetic client. The purposes of the study was to determine characteristics of CAM use. To identify factors related to CAM use such as sociodemographic, adverse effects and quality of life and to determine differences between clients who used and not use CAM. The results shows that the prevalence of CAM use was high (47.8%). The most common types of CAM used were yoga and exercise (32.8%) and (29.9%) were use unchanged form of herbal medicine, (17.8%) were changed from herbal medicine. It reveals that the government official clients were more likely to use CAM that those former clients significantly at P=0.03 level (Odds ratio = 12.11). The study found that clients who

had a higher income were more likely to use CAM than those of lower income clients significantly.

Malhotra.S, Singh. K.P.Singh, Gupta. P, and Tendon O.P, (2003) conducted a study on yoga asana like surya namaskar, todasana, konasana, padmasana, poonayama, paschimohanasana, ardhamatsyendrasana, sharasana, paranamuktasana, sarpasana and shavasana on type II diabetes mellitus. The intervention period 30 – 40 minutes everyday for 40 days. The samples were prescribed oral hypoglycemic agents. The results of fasting blood glucose (from 208.3±20.0 to 171.77±19.5 mild) and decreased in post prandial blood glucose from (295.3±22.0 to 269.7±19.9 mg/d). This findings suggest that yogaasana gives beneficial effect on glycemic control and lipid profile in mild to moderate type II diabetes.

Summary:

This chapter dealt with the review of literature related to type II diabetes mellitus and yogaasana on type II diabetes mellitus.

CHAPTER III

METHODOLOGY

The methodology of research indicates the general pattern of organizing the procedure for the gathering valid and reliable data for the purpose of investigation. **(Polit D.F, and Hungler, 2003)**

The present study aims to evaluate the effectiveness of yogaasana on blood glucose among clients with type-II diabetes mellitus at selected community, Salem.

Research Approach:

Quantitative evaluative research approach was adopted for this study.

Research Design:

Quasi experimental design involves the manipulation of an independent variable that is an intervention. Quasi experimental designs lack randomization to treatment groups. **(Polit D.F, and Beck, 2004)**

Quasi experimental design pre and posttest research design was used for this study.

$E = O_1 \ X \ O_2$
$C = O_1 \quad O_2$

E: Experimental group.

C: Control group

X: Intervention - Yogaasana

O_1: Pretest on blood glucose among clients with type II diabetes mellitus

O_2: Posttest on blood glucose among clients with type II diabetes mellitus

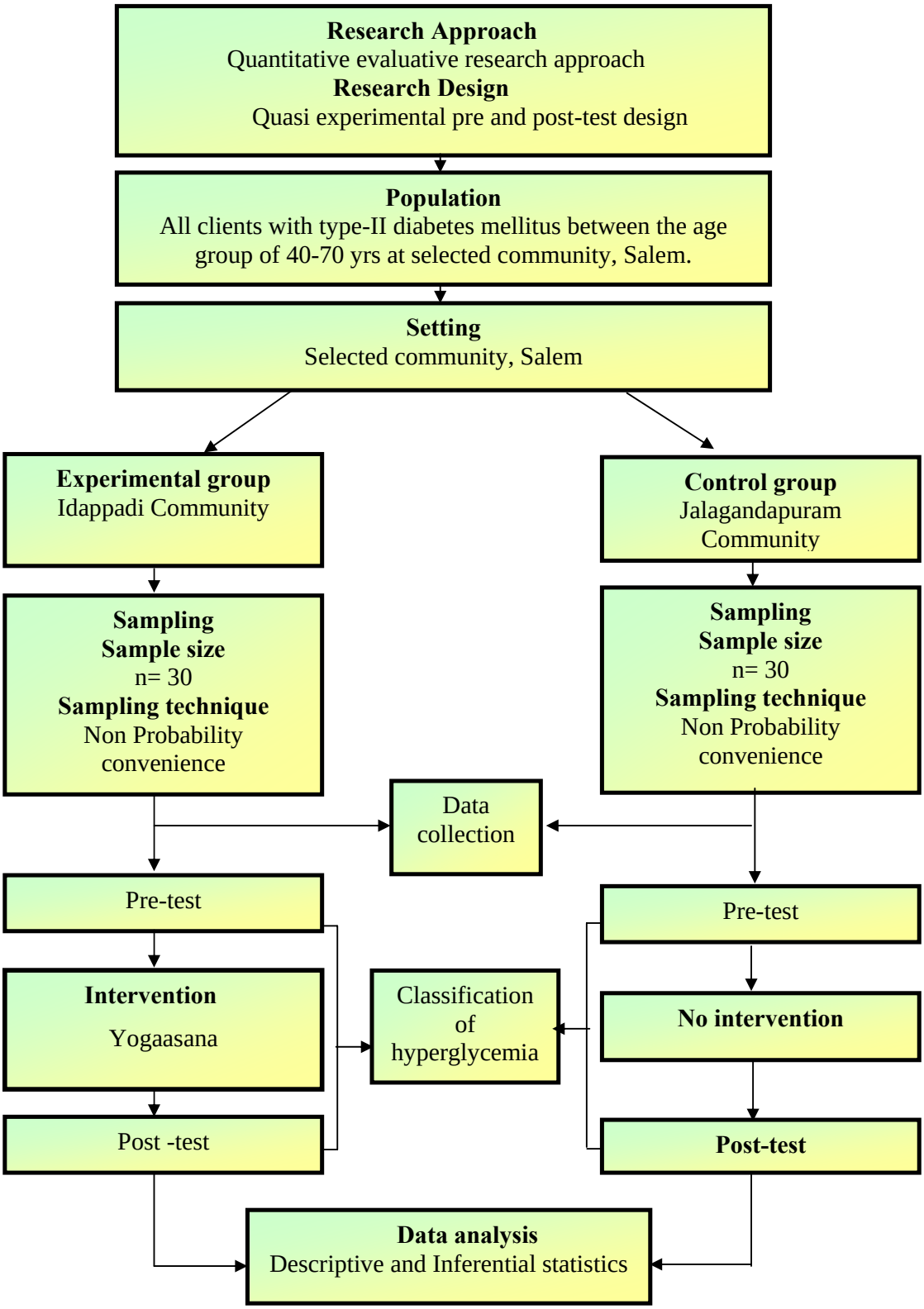


Figure -3.1: Schematic Representation of Research Methodology

Population:

The population comprises of clients with type-II diabetes mellitus with the age group of 40-70yrs visiting Government hospitals at Idappadi and Jalakandapuram, Salem, who are residing at the same community.

Description of Settings:

Setting is the general location and condition in which data collection takes place for the study. **(Polit, D.F., and Hungler, 2003)**.

The investigator selected Idappadi community for experimental group and Jalakandapuram community for control group. Idappadi community and Jalakandapuram community are 35-40kms away from Sri Gokulam College of Nursing. The setting was selected on the basis of availability of clients and access and feasibility in terms of cooperation.

Sampling:

Sampling refers to the process of selecting the portion of population to represent the entire population**. (Polit, D.F. and Hungler, 2003)**

Sample:

The sample of this study comprises of clients with type II diabetes mellitus with the age group of 40-70 yrs visiting Government Hospitals at Idappadi and Jalakandapuram, Salem and those who fulfill the inclusion criteria.

Sample size:

The investigator selected 60 clients with type II diabetes mellitus. Among them, 30 clients from Idappadi community were assigned to experimental group and 30 clients from Jalakandapuram community were assigned to control group.

Sampling technique:

Non Probability convenience sampling technique was used for this study.

Criteria for Sample Selection:

The sample selection was based on following inclusion and exclusion criteria.

Inclusion criteria:

Clients

1. who are between the age group of 40 and 70 years.
2. with type II diabetes mellitus receiving oral hypoglycemic agents.
3. who are willing to participate in the study.
4. who are available during data collection period

Exclusion criteria:

Clients

1. who are on anticoagulant therapy.
2. with knee joint pain like osteoarthritis
3. who are already exposed to yogaasana

Variables:

Independent variable: Yogaasana

Dependent variable: Blood glucose

Description of the Tool:

With the investigator's personal and professional experiences and after extensive literature review and discussion with experts the tool was developed for data collection.

It consists of following sections,

Section-A:

A structured interview schedule was used to collect information regarding demographic data such as age, sex, education, family history, occupation, dietary pattern, duration of disease and duration of drug therapy and taking diabetic diet.

Scoring procedure:

No scoring was allotted for this section. The data were used only for descriptive analysis.

Section-B:

Assessment of blood glucose was done by using digital glucometer. Digital Glucometer is a standardized electronic instrument to measure the level of glucose in blood. According to the reading of glucometer, the clients were classified into various classification of hyperglycemia. According to the classification the scores were given.

Table-3.1: Classification of hyperglycemia and score interpretation

Classification	Blood glucose value (mg/dl)	Score
Normal	70 – 110	0
Mild hyperglycemia	111 - 180	1
Moderate hyperglycemia	181 – 250	2
Severe hyperglycemia	251 – 320	3
Very severe hyperglycemia	Above 320	4

Validity and Reliability of the Tool:

Validity:

Validity is that quality of a data gathering instrument or procedure that enables it to measure what it is supposed to measure. **(John. W. Best and James V. Kahn, 2002)**

Validity of the tool was obtained from 3 Experts of Community Health Nursing, 2 Experts from Medical Surgical Nursing, 1 Diabetologists, 1 Physician and 1 Yoga therapist. The tool was found adequate and then translated into Tamil.

Reliability:

Reliability is a degree to which measures are free from errors so that they give same results when repeat measurements are made under constant". **(Ram Ahuja, 2002)**

Blood glucose was measured using standardized digital glucometer. Reliability of the tool was checked by interrater method and the reliability coefficient was r'= 1, which showed that the tool was reliable.

Pilot Study:

Pilot study was conducted to find out the feasibility of the study from 27.06.11 to 02.07.11. Written permission was obtained from the Panchayat presidents of the community. The sample size comprises of 6 clients with Type II diabetes mellitus, 3 were selected from Uthamasolapuram and assigned to experimental group and 3 were selected from Poolavari and assigned to control group through Non probability Convenience Sampling technique. Pretest on blood glucose was done by using digital glucometer on 27.06.11 for both the groups. The clients of the experimental group practiced yogaasana along with the investigator twice daily for 6 days. The duration of yogaasana was 1 hour. No intervention was given to the control group. Posttest blood glucose was done on 02.07.11 for both the groups. The collected data was analyzed by using descriptive statistics. Hence the tool was reliable and study was feasible for proceeding.

Method of Data Collection:

Ethical consideration:

Prior to collection of data written permission was obtained from the chairmans of Idappadi and Jalakandapuram community, Salem. Verbal permission was obtained

from the medical officers of Government Hospital Idappadi and Jalakandapuram, Salem.

Informed consent was obtained from the clients with type II diabetes mellitus.

Period of Data collection:

The data was collected over a period of 4 weeks from 12.07.2011 to 07.08.2011.

Procedure:

The investigator got the list of type II diabetic mellitus clients from the government hospitals. The samples were chosen from Iadappadi Community as the experimental group and from Jalakandapuram community as the control group. the samples were classified according to the classification of hyperglycemia based on the blood glucose level of the standardized digital glucometer. The pre test was done 13.07.2011 to 18.07.2011 for both groups.

The investigator introduced herself and explained the purpose of the study to the clients. Pre test blood glucose was done by using digital glucometer to the clients of experimental and control group on same day the investigator has demonstrated yogaasana only to the experimental group. The intervention of yogaasana starts with cooling Pranayama, standing asanas like Padhahasthasana, Ardha chakrasana, sitting asanas like Paschimotasana, Ardha matsyendrasana, supine position Pavanamukthasana, prone position Bhujangasana, Shalabhasana and relaxation techniques of Savasana. The duration for yoga asanas was one hour. The clients of experimental group practiced yogaasanas along with the investigator, twice daily for 21 days. During demonstration voluntary self help group member expert in yogaasana was supervised the experimental group member, clients while doing yogaasana. The clients of control group were not provided any intervention. Post test was done from

2.08.11 to 08.08.11 for both groups. Data was collected and analysed by using descriptive and inferential statistics.

Plan for Data Analysis:

Data analysis enables the investigator to organize, evaluate and communicate numerical information. The data analysis will be done by using descriptive and inferential statistics.

- Frequency distribution and percentage will be used to describe the background variables and blood glucose level.
- Mean, SD, independent 't' test will be used to compare the level of blood glucose among clients with type II Diabetes Mellitus in experimental and control group.
- Chi-square test will be used to associate the pretest blood glucose level among clients with type-II diabetes mellitus in experimental and control group with their selected background variables.

Summary:

This chapter dealt with research approach, research design, population, description of setting, sampling, variables, description of tool, validity and reliability, pilot study, method of data collection and plan for data analysis.

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

Analysis is the process of the organizing and synthesizing data in such a way that question can be answered and hypotheses are tested. **(Polit, D.F., & Hungler (2003).**

This chapter deals with the analysis and interpretation of the data collected from the clients with type-II diabetes mellitus at selected community, Salem. The data collected from the clients were tabulated, analysed and preserved in the tables and interpreted under the following sections based on the objectives and hypotheses of the study.

Presentation of Data:

This chapter is divided into four sections,

Section-A:

Distribution of clients according to their selected background variables in experimental and control group.

Section-B:

a) Distribution of clients according to their pretest blood glucose level in experimental and control group.

Section-C:

a) Distribution of clients according to their posttest classification of hyperglycemia in experimental and control group.
b) Comparison between the pretest and posttest classification of hyperglycemia among clients in experimental and control group.
c) Comparison between the pretest and posttest blood glucose among clients in experimental and control group.

Section-D: Hypotheses testing

a) Effectiveness of yogaasana on blood glucose among clients in experimental and control group.

b) Association of the pre-test blood glucose level among clients and their selected background variables in experimental and control group.

Section – A

Distribution of clients according to their selected background variables in experimental and control group.

Table-4.1:

Frequency and percentage distribution of clients according to their biographic variables in experimental and control group

(n=60)

S. No	Biographic Variables	Experimental Group (n=30)		Control Group (n=30)	
		f	%	f	%
1	**Age in years**				
	a) 40 – 50	9	30	5	16.67
	b) 51 – 60	11	36.67	12	40
	c) 61 – 70	10	33.33	13	43.33
2	**Sex**				
	a) Male	17	56.67	11	36.67
	b) Female	13	43.33	19	63.33
3	**Educational Status**				
	a) No formal education	14	46.67	9	30
	b) primary school	6	20	11	36.68
	c) High school	8	26.67	4	13.33
	d) Higher secondary school	1	3.33	4	13.33
	d) Diploma	0	0	1	3.33
	f) Graduate	1	3.33	1	3.33
	g) Post graduate	0	0	0	0

The above table shows that in experimental group 11(36.67%) are between the age group 51-60 yrs, 17(56.67%) are male, and 14(46.67%) have no formal education.

In control group 13(43.33%) are between the age group of 61-70 years, 19(63.33%) are females and 11(36.68%) have primary school education.

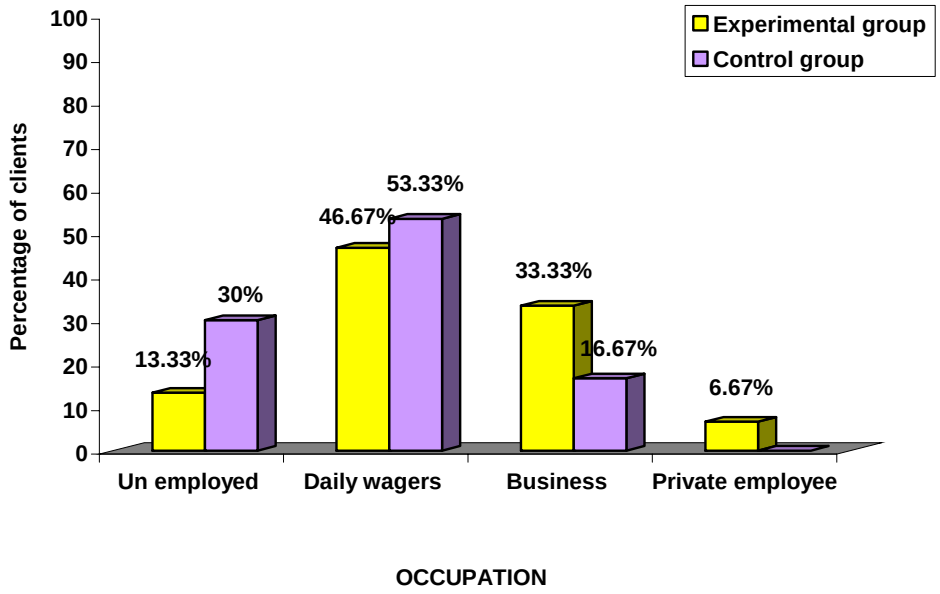


Figure-4.1: Distribution of clients according to their socio-economic variable in experimental and control group

The above figure shows that in experimental group 14(46.67%) are daily wagers, 10(33.33%) are in business, 4(13.33%) are unemployed and 2(6.67%) are private employee.

In control group 16(53.33%) are daily wagers, 9(30%) are unemployed and 5(16.67%) are in business.

Table-4.2:

Frequency and percentage distribution of clients according to their illness related variables in experimental and control group

n=60

S. No	Illness related Variables	Experimental Group (n=30)		Control Group (n=30)	
		f	%	f	%
1	**Duration of illness**				
	a) 1- 3 years	12	40	9	30
	b) 4- 6 years	9	30	11	36.66
	c) 7- 9 years	2	6.67	5	16.67
	d)>9 years	7	23.33	5	16.67
2	**Duration of taking treatment**				
	a) Less than 1 years	3	10	1	3.34
	b) 1-3 years	11	36.67	10	33.33
	c) 4-6 years	7	23.33	9	30
	d) More than 6 years	9	30	10	33.33
3	**Family History of diabetes mellitus**				
	a) No family history	20	66.67	26	86.67
	b) First degree relative	9	30	3	10
	c) Second degree relative	1	3.33	1	3.33

The above table shows that in experimental group 12(40%) clients are with type-II diabetes mellitus for the past 1-3 years, 11(36.67%) are taking treatment for the past 1-3 years, and 20(66.67%) do not have any family history of diabetes mellitus.

In control group 11(36.66%) clients are with type-II diabetes mellitus for the past 4-6 years, 10(33.33%) are taking treatment for the past 1-3 years and also more than 6 years, 26(86.67%) do not have any family history of diabetes mellitus.

Table-4.3:

Frequency and percentage distribution of clients according to their personal variables in experimental and control group

n=60

S. No	Personal Variables	Experimental Group (n=30)		Control Group (n=30)	
		f	%	f	%
1	**Dietary Pattern**				
	a) Vegetarian	0	0	2	6.67
	b) Non vegetarian	30	100	28	93.33
2	**Taking diabetic diet**				
	a) Yes	9	30	9	30
	b) No	21	70	21	70

The above tables shows that in experimental group 30(100%) are non vegetarians and 21(70%) do not take diabetic diet. In control group 28(93.33%) are non vegetarians and 21(70%) do not take diabetic diet.

Section-B

a) Distribution of clients according to their pretest classification of hyperglycemia in experimental and control group

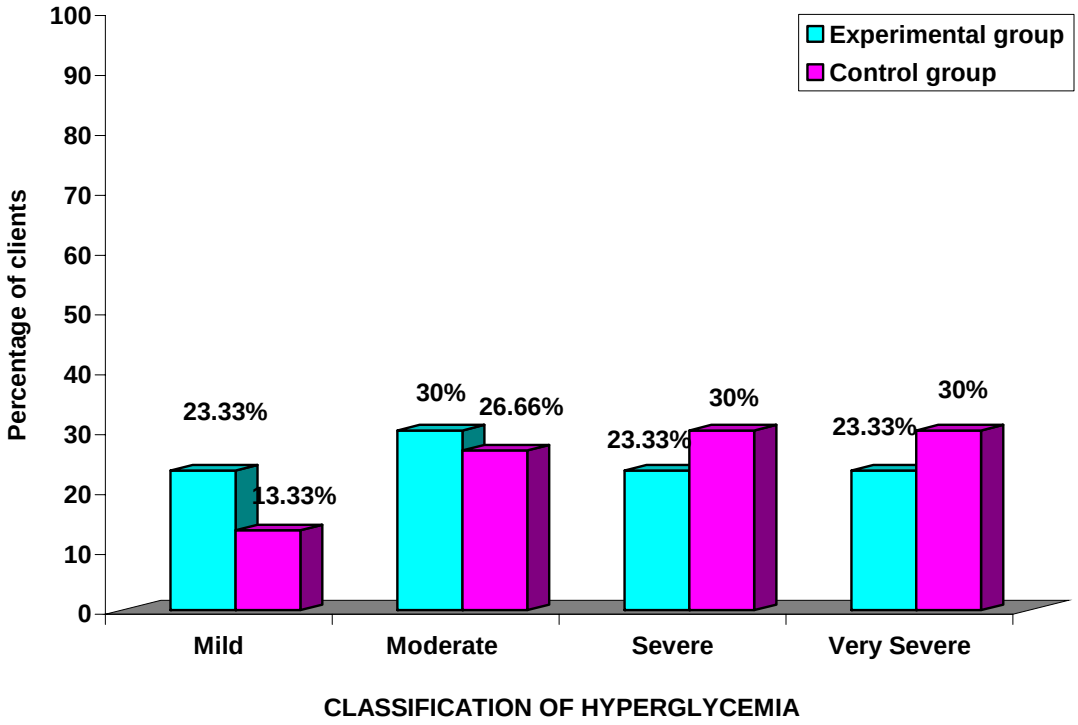


Figure-4.2: Percentage distribution of clients according to their pretest classification of hyperglycemia in experimental and control group

The above figure shows that in pretest experimental group 9(30%) have moderate hyperglycemia, 7(23.33%) have mild hyperglycemia, severe and very severe hyperglycemia. In control group 9(30%) have severe and very severe hyperglycemia, 8(26.67%) have moderate hyperglycemia 4(13.33%) have mild hyperglycemia.

Section - C

a) Distribution of clients according to their posttest classification of hyperglycemia in experimental and control group

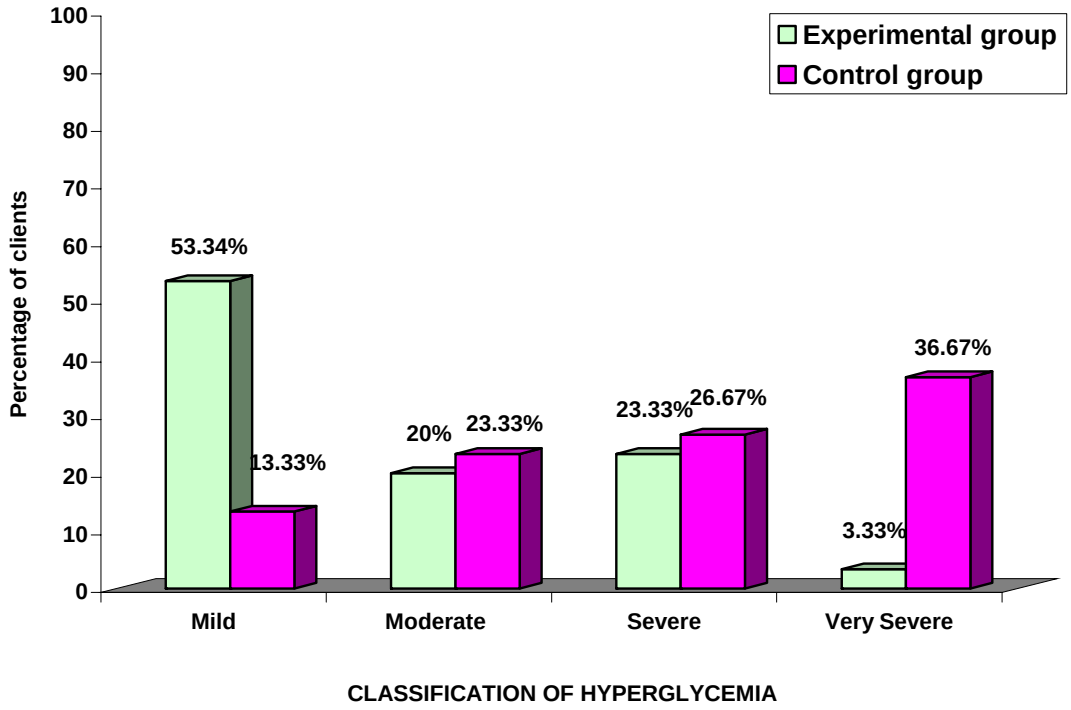


Figure-4.3: Percentage distribution of clients according to their posttest classification of hyperglycemia in experimental and control group

The above figure shows that in posttest experimental group 16(53.34%) have mild hyperglycemia, 7(23.33%) have severe hyperglycemia, 6(20%) have moderate hyperglycemia, 1(3.33%) have very severe hyperglycemia. In control group 11(36.67%) have very severe hyperglycemia 8(26.67%) have severe hyperglycemia, 7(23.33%) have moderate hyperglycemia and 4(13.33%) have mild hyperglycemia.

b) Comparison between the pretest and posttest classification of hyperglycemia among clients with type-II diabetes mellitus in experimental and control group

Table-4.4:

Frequency and percentage distribution on pretest and posttest classification of hyperglycemia among clients in experimental and control group.

(n=60)

S. No	Classification of hyperglycemia	Experimental Group				Control Group			
		Pre test		Post test		Pre test		Post test	
		f	%	f	%	f	%	f	%
1	Mild hyperglycemia	7	23.33	16	53.33	4	13.33	4	13.33
2	Moderate hyperglycemia	9	30	6	20	8	26.67	7	23.33
3	Severe hyperglycemia	7	23.33	7	23.33	9	30	8	26.67
4	Very severe hyperglycemia	7	23.33	1	3.33	9	30	11	36.67

The above table shows that in experimental group during pretest 9(30%) have moderate hyperglycemia, 7(23.33%) have mild, severe and very severe hyperglycemia. In control group 9(30%) are severe and very severe hyperglycemia, 8(26.67%) have moderate hyperglycemia, 4(13.33%) have mild hyperglycemia.

In the experimental group during posttest 16(53.33%) have mild hyperglycemia 7(23.33%) have severe hyperglycemia, 6(20%) have moderate hyperglycemia, 1(3.33%) have very severe hyperglycemia. In control group 11(36.67%) have very severe hyperglycemia, 8(26.67%) have severe hyperglycemia, 7(23.33%) have moderate hyperglycemia and 4(13.33%) have mild hyperglycemia.

c) Comparison between the pretest and posttest blood glucose among clients in experimental and control group.

Table-4.5:

Mean, Standard deviation and mean difference on blood glucose level among clients in experimental and control group.

n=60

S. No	Group	Maximum score	Pre - test		Post test		MD
			Mean	SD	Mean	SD	
1	Experimental Group	4	2.46	1.16	1.76	0.93	0.7
2	Control Group		2.76	1.04	2.86	0.97	-0.1

The above table shows that in experimental group the pretest mean score was 2.46 $\pm$ 1.16 and posttest mean score was 1.76 $\pm$ 0.93 with the mean difference of 0.7.

In control group the pretest mean score was 2.76 $\pm$ 1.04 and posttest mean score was 2.86 $\pm$ 0.97 with the mean difference of -0.1. This shows yogaasana has reduced the blood glucose of clients with type II diabetes mellitus in experimental group.

Section -D

Hypotheses Testing

a) Effectiveness of yogaasana on blood glucose level among clients in experimental and control group.

Table-4.6:

Mean, SD and 't' value of posttest blood glucose level among clients in experimental and control group.

n=60

S. No	Groups	Post Test		df	't' value	Table value
		Mean	SD			
1	Experimental Group	1.76	0.93	58	5.41*	2.00
2	Control Group	2.86	0.97			

***significant at p<0.05 level**

The above table shows that in experimental group, the post test mean score on classification of hyperglycemia was 1.76 $\pm$ 0.93 and in control group, the post test mean score was 2.86 $\pm$ 0.97. The 't' value was 5.41 which shows that yogaasana is effective in reducing blood glucose among clients with type II diabetes mellitus in experimental group. Hence, hypothesis H_1 was retained at P<0.05 level

b) Association between the pretest blood glucose level among clients and their selected background variables in experimental and control group.

Table-4.7:

Chi-square test on the pretest blood glucose level among clients and their selected biographic variables in experimental and control group.

n=60

S. No	Biographic Variable	Experimental Group			Control Group		
		df	χ^2	Table Value	df	χ^2	Table Value
1	Age in years	6	3.01	12.59	6	2.78	12.59
2	Sex	3	8.06*	7.82	3	11.37*	7.82
3	Educational Status	12	36.42*	21.03	15	31.464*	24.99

***significant at p<0.05 level**

In both experimental and control group there is as significant association between the pretest blood glucose level and their selected biographic variables like sex and educational status. Hence the hypothesis H_2 was retained only for the above mentioned variables at P<0.05 level.

Table-4.8:

Chi-square test on the pretest blood glucose level among clients and their selected socio-economic variables in experimental and control group.

n=60

S. No	Socio-economic Variable	Experimental Group			Control Group		
		df	χ^2	Table Value	df	χ^2	Table Value
4	Occupation	6	1.84	12.59	6	3.66	12.59

The above table shows that there is no association between the pretest blood glucose level and their selected socioeconomic variable like occupation. Hence the hypothesis H_2 was rejected for the above mentioned variable at P>0.05 level.

Table-4.9:

Chi-square test on the pretest blood glucose level among clients and their selected illness related variables in experimental and control group.

n=60

S. No	Illness related Variable	Experimental Group			Control Group		
		df	χ^2	Table Value	df	χ^2	Table Value
5	Duration of illness	9	12.08	16.92	9	10.05	16.92
6	Duration of taking treatment	6	13.94*	12.59	9	9.076	16.92
7	Family history of diabetes mellitus	6	9.274	12.59	6	5.515	12.59

***significant at p<0.05 level**

The above table shows that there was a significant association between the pretest blood glucose level and their selected illness related variables like duration of taking treatment in experimental group. Hence hypothesis H_2 was retained only for the above mentioned variable in experimental group at P<0.05 level.

There was no association found between the pretest blood glucose level and their selected illness related variables in control group. Hence hypothesis H_2 was rejected at P>0.05 level.

Table-4.10:

Chi-square test on the pretest blood glucose level among clients and their selected personal variables in experimental and control group.

n=60

S. No	Personal Variable	Experimental Group			Control Group		
		df	χ^2	Table Value	df	χ^2	Table Value
8	Dietary pattern	-	-	-	3	1.645	7.82
9	Taking diabetic diet	3	5.81	7.82	3	5.71	7.82

The above table shows that there is no association between the pretest blood glucose level and their selected personal variables in both experimental and control group. Hence the hypothesis H_2 was rejected at P>0.05 level.

Summary:

This chapter deals with data analysis and interpretation in the form of statistical values based on the objectives. Here the frequency and percentage was used to distribute the clients according to their selected background variables and blood glucose level in experimental and control group. The independent 't' test was used to evaluate the effectiveness of yogaasana on blood glucose. The chi-square analysis was used to associate the pretest blood glucose level with their selected demographic variables.

CHAPTER – V

DISCUSSION

This chapter discuss the findings of the study derived from the descriptive and inferential statistics. This study was conducted to evaluate the effectiveness of yogaasana on blood glucose level among clients with type-II Diabetes Mellitus at selected community, Salem.

Demographic variables

- In experimental group 11(36.67%) clients and in control group 13(43.33%) clients were in age group of 51-60 and 61-70 years. This study was supported by **(Professor Maria Ines, Schmidt)** during the campaign, 21.8 million (73% of those targeted, adults ≥40 years of age) were tested with glucose meters. Of these, 1% (about 0.25 million) had values ≥ 15 mmol/L (270 mg/dl) and were referred directly for medical management.
- Majority 17(56.67%) clients in experimental group were males, and 19(63.33%) of clients in control group were females. This study was supported by **Goodwin and Stein, (2004)** used data from the National Co-morbidity Survey (n=5877). In particular, a history of childhood neglect was associated with a higher risk of diabetes (OR 2.2, 95% CL 1.7 – 4.4) and this risk was higher among women (OR 4.6, 95% CL 2.3 – 9.3) after adjustment for age, gender, race, marital status, income and education.
- In experimental group 14(46.67%) had no formal education whereas in control group 11(36.67%) had completed primary school.
- In experimental group and control group 14(46.67%) and 16(53.33%) of clients were daily wagers.

- In experimental group 12(40%) clients were suffering with type II diabetes mellitus for the duration of past 1-3 years, and in control group 11(36.67%) clients were suffering with type II diabetes mellitus for the duration of past 4-6 years.
- In experimental group 11(36.67%) clients were 1-3 years duration of taking treatment, in control group 10(3.33%) were 1-3 years and more than 6 years.
- Majority 20(66.67%) and 26(86.67%) of clients in experimental and control group had no family history of diabetes mellitus. This study supported by **Danadian, et.al., (1999),** he reported that black children with a family history of type II diabetes mellitus have 25% lower insulin stimulated glucose disposal compared with black children without a family history of type II diabetes mellitus.
- Majority 30(100%) and 28(93.33%) of clients in experimental and control group were nonvegetarian. This study was supported by **Serena Tonstat, (2009)** reported that prevalence of type II diabetes increased from 2.9% vagans to 7.6% in nonvegetarians.
- Majority of 21(70%) and 21(70%) of clients in experimental and control group were not taking diabetic diet.

The first objective was to assess the blood glucose level among clients with type II diabetes mellitus in experimental and control group.

During pretest, in experimental group 9(30%) of them belonged to moderate hyperglycemia, 7(23.33%) belonged to mild, severe, and very severe hyperglycemia. In control group 9(30%) belonged to severe and very severe hyperglycemia, 8(26.67%) belonged to moderate hyperglycemia and 4(13.33%) belonged to mild hyperglycemia.

During posttest, in experimental group 16(53.34%) of them belonged to mild hyperglycemia, 7(23.33%) belonged to severe hyperglycemia, 6(20%) belonged to moderate hyperglycemia, 1(3.33%) belonged to very severe hyperglycemia. In control group 11(36.67%) belonged to very severe hyperglycemia, 8(26.67%) belonged to severe hyperglycemia, 7(23.33%) belonged to moderate hyperglycemia and 4(13.33%) belonged to mild hyperglycemia.

The second objective was to evaluate the effectiveness of yogaasana on blood glucose level among clients with type II diabetes mellitus in experimental group

In experimental group, the posttest mean score of blood glucose was 1.76±0.93 and in control group, the posttest mean score was 2.86 ±0.97. The 't' value was 5.41 shows that yogaasana was effective in reducing the blood glucose level of clients with type II diabetes mellitus in experimental gorup. Therefore hypothesis H_1 was retained at $P<0.05$ level.

This study was supported by **Amita. S, et.al., (2009)** conducted a study to evaluate of Yoga-Nidra on blood glucose level in diabetic patients. This study was conducted on 41, middle aged, type-II diabetes patients, who were on oral hypoglycaemic. These patients were divided into two groups (a) 20 patients on oral hypoglycaemic with yog-nidra, and (b) 21 were on oral hypoglycaemic alone. Yoga-Nidra was practiced for 30 minutes daily upto 90 days, parameters were recorded every 30^{th} day. Results of this study showed that most of the symptoms were subsided ($P < 0.004$, significant), and fall of mean blood glucose level was significant after 3 months of Yoga-Nidra. This fall was 21.3 mg/dl, P, 0.0007, (from 159 ±12.27 to 137.7 ±23.15) in fasting and 17.95 mg/dl $P<0.02$, (from 255.45 ± 16.85 to 237.5 ±30.54) in post prandial glucose level. Results of this study suggest that subjects on Yoga-Nidra with drug regimen had better control in their fluctuating blood glucose

and symptoms associated with diabetes, compared to those were on oral hypoglycaemics alone.

The third objective was to find out the association between pretest blood glucose level among clients with type II diabetes mellitus and their selected background variable in experimental and control gorup.

In experimental group there was a significant association between the pretest blood glucose level and their selected background variables like sex, educational status and duration of taking treatment for diabetes mellitus. Hence hypothesis H_2 was retained at $P<0.05$ level. In control group there was a significant association between the pretest blood glucose level and their selected biographic variables like sex and educational status. Hence hypothesis H_2 was retained only for the above mentioned variables at $P<0.05$ level.

This study was supported by **Vibin Gupta, (2010)** reported that data from the NFHS of 2005-200 suggested that the number of women who have diabetes ranges from 0.28% women in Rajasthan to 2.54% women in Kerala. Five states (Tamilnadu, Goa, Tripura, West Bengal and Delhi) have relatively high (>1.5%) number of women in type II diabetes mellitus. Rajasthan, Uttar Pradesh and Assam and Maharashtra have type II diabetes mellitus prevalence levels below 0.5%. Among men, six states; Kerala, Goa, Tripura, West Bengal, Andhra Pradesh, and Sikkim have prevalence level > 1.5%. Five states; Kashmir, Mizoram, Himachal Pradesh, Rajasthan, Uttar Pradesh have prevalence below 0.5% from men.

Summary:

The discussion made in this chapter was based on the objectives of the study and its relation with similar studies conducted by other investigators. All the three objectives have been obtained and the two formulated hypotheses were retained in this study.

CHAPTER – VI

SUMMARY, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

This chapter consists of four sections. The first two sections consists of summary and conclusion and in the last two sections the implications for nursing practice and recommendations are presented.

Summary:

The purpose of this study was to evaluate the effectiveness of yogaasana on blood glucose among clients with type-II diabetes mellitus. A quasi experimental pre and posttest design was used to conduct this study at Idappadi and Jalakandapuram Governmenta hospitals, Salem and 60 clients with type-II diabetes mellitus were selected through non probability convenience sampling technique. Among 60, 30 clients of Idappadi community were assigned to experimental group and 30 of Jalakandapuram community to control group. A structured interview schedule was used to collect general information and digital glucometer was used to check the pretest and posttest blood glucose level. The clients of experimental group were practiced yogaasana twice a day for 21 days. The duration of yogaasana was 1 hour. Posttest for both groups was done on 21st day. The baseline data was tabulated by formulating frequency table. The blood glucose level was assessed using descriptive statistics. The effectiveness of yogaasana was evaluated by 't' test. The chi-square analysis was done to associate the pretest blood glucose level with their selected background variables of clients with type-II diabetes mellitus.

Major Findings of the Study:

- In experimental group 11(36.67%) clients and in control group 13(43.33%) clients were in the age group of 51-60 years and 61-70 years.

- Majority 17(56.67%) clients in experimental group were males, and 19(63.33%) of clients in control group were females.
- In experimental group 14(46.67%) had no formal education whereas in control group 11(36.67%) had completed primary school.
- In experimental group and control group 14(46.67%) and 16(53.33%) of clients were daily wagers.
- In experimental group 12(40%) clients were suffering with type II diabetes mellitus for the duration of past 1-3 years and in control group 11(36.67%) clients were suffering with type II diabetes mellitus for the duration of past 4-6 years.
- In experimental group 11(36.67%) clients were 1-3 years duration of taking treatment, in control group 10(3.33%) were 1-3 years and more than 6 years.
- Majority 20(66.67%) and 26(86.67%) of clients in experimental and control group had family history of diabetes mellitus.
- Majority 30(100%) and 28(93.33%) of clients in experimental and control group were nonvegetarian.
- Majority of 21(70%) and 21(70%) of clients in experimental and control group were not taking diabetic diet.
- During pretest in experimental group 9(30%) had moderate hyperglycemia and in control group 9(30%) were severe and very severe hyperglycemia. During posttest, in experimental group 16(53.33%) had mild hyperglycemia and in control group 11(36.67%) had very severe hyperglycemia.
- The calculated ‘t’ test value (5.41) was higher than table value. Hence it can be concluded that yogaasana was effective in reducing blood glucose and the formulated hypothesis H_1 was retained at $P<0.05$ level.

- In experimental group there was a significant association between the pretest blood glucose level and their selected background variables like sex, educational status and duration of taking treatment. In control group there was a significant association between the pretest blood glucose level and their selected biographic variables like sex and educational status. Hence hypothesis H_2 was retained for these variables at $P<0.05$ level.

Conclusion:

This study was to evaluate the effectiveness of yogaasana on blood glucose level among clients with type-II diabetes mellitus at selected community, Salem. The result shows that the yogaasana was effective in reducing blood glucose level among clients with type-II diabetes mellitus. There was significant association between the pretest blood glucose level and their selected background variables such as sex, educational status and duration of taking treatment in experimental group, whereas in control group sex and educational status were found to have significant association. Hence hypothesis H_2 was retained for these variables at $P<0.05$ level.

Implications:

The findings of the study have the following implications in the various areas of nursing service, nursing education, nursing administration and nursing research.

Nursing Service:

- In service education can be provided to the peripheral level health workers and train them on yoga therapy.
- The nurse should teach the benefit of yogaasana in reducing blood glucose among clients with diabetes mellitus in hospitals.
- The nurse should provide adequate exposure to setting where adjunct treatment is used for management of hyperglycemia.

- Nursing staff can take specialized training in yoga therapy to prevent complication of diabetes mellitus.

Nursing Education:

- Nurse educator should provide adequate training to the students regarding yogaasana
- Periodic conferences, seminars and symposium can be arranged regarding alternative therapies to update nursing professionals about its importance.
- The nursing curriculum should emphasize on yoga therapy along with pharmacological management of diabetes mellitus.
- The nurse educator should provide exposure to yoga therapy to encourage the student nurses to expand their career in that field.
- The nurse should encourage the student nurses to educate their clients regarding yoga therapy during their clinical posting.

Nursing Administration:

- The nurse administrator should arrange for public awareness programme regarding cost effective means of preventing diabetes mellitus.
- In clinical practice a policy may be developed to practice yoga therapy for clients with type-II diabetes mellitus.
- Administrator should initiate health education in community by utilizing the staff preparing through adequate training and encouragement in yoga therapy.
- Nurse should organize formal training programme in alternative system of medicine
- Nurse should get actively involved in periodical organization of continuing education regarding non pharmacological management of diabetes mellitus.

Nursing Research:

- More researches can be done to establish effectiveness of yogaasana.
- Researchers should concentrate on nonpharmacologic interventions to reduce hyperglycemia.
- Disseminate the findings through conferences, seminar, publications in professional, national and international journals.
- The generalization of study result can be made by further replication of the study.
- As per the study a nursing care guide can be developed for future references.

Recommendations:

- Similar studies can be done with large group.
- Similar study can be done with newly diagnosed clients.
- Similar study can be done among clients with type-I diabetes mellitus.
- Comparative study can be done with pharmacological and non pharmacological management of clients with type-II diabetes mellitus.
- Comparative study can be done to evaluate the effectiveness of yogaasana on fasting and post prandial blood glucose level.
- Similar study can be done in urban and rural area clients with type-II diabetes mellitus.

BIBLIOGRAPHY

Books

- Bears Myers. (1998). *Adult health Nursing* (3rd edition) Philadelphia: Mosby Publications, 1412-1422.
- Black Joyce M, Jaine Hokanson Hacoks. (2005). *Medical surgical nursing* (7th edition). Philadelphia: W.B.Saunders Company.
- Brunner & Suddarth. (2004). *Textbook of medical surgical nursing* (11th edition). Philadelphia: Lippincott Williams and Wilkins.
- Joyce M Black and Jane Hokanson Hawks. (2005). *Medical Surgical Nursing* (7th edition). Philadelphia: WB Sounders Company, 1257.
- Lowis, Heit Kemper and Dirkson. (2004). *Textbook medical and surgical nursing* (5th edition). Philadelphia: Mosby Publications, 1272.
- Luckman and Soronsen's. (2001). *Medical surgical nursing, Physhophysiologic approach* (4th edition). Philadelphia: WB Sounders Company, 1775.
- Polit. DF, and Hungler. B.P. (2004). *Nursing Research Principles and methods* (5th edition). Philadelphia: J.B. Lippincott Company.
- Potter & Perry, (2001). *Fundamental of nursing* (5th edition). London: Mosby Publications, 9-92.
- Ross & Willson. (2002). *Textbook of anatomy and physiology in health and illness* (10th edition). Philadelphia: Livingstone company, 232.
- Suzanne C. Smeltzer and Brenda Bare. (2004). *Textbook of medical and surgical nursing* (10th edition). Philadelphia: Lippincott Company, 1151-1154.
- Sundar Rao and Richard. (1997). *An introduction of biostatistics* (3rd edition). Philadelphia: Lippincott company.

Journals

- Amita S, Prabhakar S, Manoj I, Harminder S, Pavan T. (2009). Effect of yoga-nitra on blood glucose level in diabetic patients. *Indian Journal Physiological Pharmocol*, 53(1), 97-101.
- Amy. S. Shah, et.al., (2009). Influence of duration of diabetes glycemic control and young adult with type II diabetes mellitus. *Journal clin. Endocrinol. Metabolic*, 94(10), 3740-3745.
- Ankur Sethi, Saurath Srivastava S.V. Madhu. (2007). Prevalence and pattern of use of indigenous medicines in diabetes patients attending a tertiary care centre. Journal of Indian Medical Association, 109, 469-471.
- Aparna Kuna, Spandana. S and Poshadri A. (2010). Medicinal plants for diabetes mellitus, *Health Action*, 32-33.
- Chaya MS, Ramakrishnan G, Shastry S, et.al., (2008). Insulin sensitivity function in young male practitioner of yoga, *Natural Medical Journal India*, 21(5), 217-21.
- Cohen BE, Chang AA, Grady D, Kanaya AM. (2008). Restorative yoga in adults with metabolic syndrome: A randomized, controlled pilot trail. *Metabolic syndrome related disorder fall*. 6(3), 223-9.
- David. K, McCulloch. MD, et.al., (2011). Management of persistant hyperglycemia in type II diabetes mellitus.
- Joe A, Florence MD, and Bryan.F Yeager, Pharm.D. (1999). Practical therapeutics treatment of type II diabetes mellitus. *American Family Physician.*
- Kernap Sarabai. L (2011*).* Effectiveness of Roasted fenugreek seed powder on NIDDM patients. *The Journal of Nurse.* 4(1), 3-5

- Kosuri M, Sridhar GR. (2009). Yoga practice in diabetes improves physical and psychological outcomes. *Metab.syndr.relat.disorder*, 7(6), 515-7.
- Lakhwider Kaur, (2006). Influence of complementary therapies on health. *Indian Journal of holistic nursing*, 2(3), 12-13.
- Malhotra. V, Singh. S, Tandon OP, Sharma SB. (2005). The beneficial effect of yoga in diabetes. *Nepal medical college Journal*, 7(2), 145-47.
- Prabhudeva. S.S. (2009). India is world diabetes capital. *Nightingale Nursing Times*, 5(8), 13.
- Pradeep R, Mohan V. (2001). Changing scenario of the diabetes epidemic implications for India, *Indian journal of medical research*.
- Sahay BK. (2007). Role of yoga in diabetes, *Journal Assoc. Physicians India*, 55, 121-6.
- Sharma.R, Gupta.N, Bijani RC. (2008). Effect of yoga based lifestyle intervention on subjective well being, *Indian Journal Physiol Pharmacol*. 52(2), 123-31.
- Shekhar Shak. (1999). Exercise, yoga, games and diabetes. *Asian Journal of diabetology*, 1(3), 40-44.
- Telidevi Venkata Satyanarayanamma, (2010). Management of diabetes mellitus by diabetic patients, Nightingale Nursing Times. 6(8): 53-56.
- Usha .V.K, Lalitha.K. (2011). Physical problems of senior citizens, A gender perspective. *The official journal of Trained Nurses Association of India*. 6(3), 5-15.
- Vipin Gupta. (2009). Type II diabetes mellitus in India, *South Asia Network for chronic disease, New Delhi.*

- Yang Y, Bernardo LM, Screika SM, Conroy MB, Balk J, Burke LE. (2009). Utilization of 3 months yoga program for adults at high risk for type II diabetes. *A Pilot study evidence based complement alternative medicine*.

Net References

- King H, Aubert RE, and Herman WH. (2010). Global burden of diabetes. 1995-2025: prevalence, numerical estimates, and projections. retrieved April 12, 2010 from http://www.geonline.org/cgi/content/ful/161/1/1
- Vivekananda, (2009). Effect of asana on blood sugar level. Retrieved on March 3, 2010 from http://www.medindia.net/yoga-lifestyle/ diabetes-effect.htm#1xzz1eyg8kele.
- Trans Power, (2010). Emotional stress cause type II diabetes mellitus. Retrived on February 13, 2011 from http://www.discoverymedicine.com/trans-power2010/2/11/ does-emotional stress,cause…
- Serena Tonstad, et.al., (2009). Type of vegetarian diet, body weight, and prevalence of type II diabetes. Retrieved on June 25, 2011 from http://www.ncbi.nlm.nih.gov/pmc/articles/ pmc2671114/
- Vivekananda (2009). Padiatastasana standing forward bend yoga posture. Retrieved on May 23, 2010 from http://yoga108.org/pages/show/117. padiatastasana-standingforward-bend-yoga- posture 5/30/2011.
- Vivekananda (2009). Yoga Journal-Cobrapose. Retrieved on October 23, 2011 from http://www.yogajournal.com/poses/47/retrieved 2011.04.9

ANNEXURE – A

LETTER SEEKING PERMISSION TO CONDUCT RESEARCH STUDY

From

Mrs. S.Rajeswari,
Final Year, M.Sc., (N)
Sri Gokulam College of Nursing,
Salem, Tamil Nadu.

To

The Principal,
Sri Gokulam College of Nursing,
Salem, Tamil Nadu.

Respected Sir/Madam,

Sub: Permission to conduct research project - request- reg.

I**, S.Rajeswari,** Final Year M.Sc., (Nursing) student of Sri Gokulam College of Nursing, is conducting research project in partial fulfilment of Tamil Nadu Dr.M.G.R. Medical University, Chennai, as a part of the requirement for the award of M.Sc., (Nursing) Degree.

Topic: "A Study To Evaluate The Effectiveness Of Yogaasana On Blood Glucose Level Among Clients With Type II Diabetes Mellitus At Selected Community, Salem."

I request you to kindly do the needful.

Thanking you.

Date : 13.07.2011 Yours sincerely,
Place : Salem

(S. RAJESWARI)

ANNEXURE – B

LETTER GRANTING PERMISSION TO CONDUCT RESEARCH STUDY

To

The Chairman,
Jalakandapuram,
Salem.

Respected Sir/Madam,

Sub: Permission to conduct a research project request reg.

This is to introduce **Mrs. S. Rajeswari,** Final Year M.Sc., (Nursing) student of Sri Gokulam College of Nursing. She is to conduct research project which is to be submitted to the Tamil Nadu Dr. M.G.R. Medical University, Chennai in partial fulfillment of University requirement for the award of M.Sc., (Nursing) Degree.

Topic: "A Study to Assess the Effectiveness of Yogaasana on Blood Glucose among Type II Diabetes Mellitus clients at Selected Community, Salem".

Kindly permit her to conduct a research project in Jalakandapuram Community, Salem from 13.07.2011 to 07.08.2011. I assure that the collected data would be kept confidential and used only for the study purpose.

Thanking You

Place: Salem.
Date : 12-07-11

Yours Sincerely,

(DR.JAYASUDHA)
PRINCIPAL
Sri Gokulam College of Nursing
SALEM – 636 010.

LETTER GRANTING PERMISSION TO CONDUCT RESEARCH STUDY

SRI GOKULAM COLLEGE OF NURSING
3/836, Periyakalam, Neikkarapatti, Salem - 636 010.
Phone : 0427 - 6544550,2272240,2272250 Fax : 0427 - 2270200, 2447077
Email : sgcon2001@yahoo.com, sgcon2001@gmail.com

Date : .....

From

Mrs. S. Rajeswari,
II Year M.Sc., (N)
Sri Gokulam College of Nursing,
Salem, Tamil Nadu.

To

The Chairman,
Idappadi
Salem.

Through

The Principal,
Sri Gokulam College of Nursing,
Salem, Tamil Nadu.

Respected Sir,

Sub: Permission to conduct research project request – reg.

I, **RAJESWARI. S** ,II Year M.Sc., (Nursing) student of Sri Gokulam College of Nursing, is to conduct a research project which is to be submitted to the Tamil Nadu Dr. M.G.R. Medical University, Chennai in partial fulfillment for the award of M.Sc. (Nursing) Degree.

Topic: "A Study to Assess the Effectiveness of Yogaasana on Blood Glucose level among Type II Diabetes Mellitus clients at Selected Community, Salem."

Kindly permit to conduct a research project in Idappadi community, Salem, from 11-07-2011 to 07-08-2011.I assure that the collected data would be kept confident and used only for the study purpose.

Thanking you,

Yours Obediently,

Place : Salem

Date : 11 -07-201

(S. RAJESWARI)

Sir/Madam, Kindly do the needful.

PRINCIPAL
Sri Gokulam College of Nursing
SALEM – 636 010.

LETTER GRANTING PERMISSION TO CONDUCT RESEARCH STUDY

To

The Chairman,
Idappadi,
Salem.

Respected Sir/Madam,

Sub: Permission to conduct a research project request reg.

This is to introduce **Mrs. S. Rajeswari,** Final Year M.Sc., (Nursing) student of Sri Gokulam College of Nursing. She is to conduct research project which is to be submitted to the Tamil Nadu Dr. M.G.R. Medical University, Chennai in partial fulfillment of University requirement for the award of M.Sc., (Nursing) Degree.

Topic: "A Study to Assess the Effectiveness of Yogaasana on Blood Glucose among Type II Diabetes Mellitus clients at Selected Community, Salem".

Kindly permit her to conduct a research project in Idappadi Community, Salem from 13.07.2011 to 07.08.2011. I assure that the collected data would be kept confidential and used only for the study purpose.

Thanking You

15/7/2011
கூ.ஜெயசுதா எம்.எஸ்சி.,
தலைவர்,
ஜெயராஜி ஒன்றியக் கழை.
ஜெயராஜி ஒன்றியம்.
எடப்பாடி.

Place: Salem.
Date : 12-07-11

Yours Sincerely,

(DR.JAYASUDHA)
PRINCIPAL
Sri Gokulam College of Nursing
SALEM – 636 010.

ANNEXURE - C

LETTER REQUESTING OPINION AND SUGGESTIONS OF EXPERTS FOR CONTENT VALIDITY OF THE RESEARCH TOOLS

From

Mrs.S.Rajeswari
Final Year M.Sc., (N)
Sri Gokulam College of Nursing,
Salem, Tamil Nadu.

To,

Respected Sir/ Madam,

Sub: Requesting opinion and suggestions of experts for establishing content validity of the tools.

I, **Mrs.S.Rajeswari**, a Final Year M.Sc., (Nursing) student of Sri Gokulam College of Nursing, Salem. I have selected the topic mentioned below for the research project to be submitted to The Tamil Nadu Dr. M.G.R. Medical University, Chennai for the partial fulfilment of Master's Degree in Nursing.

Topic: "A Study To Evaluate The Effectiveness Of Yogaasana On Blood Glucose Level Among Clients With Type II Diabetes Mellitus At Selected Community, Salem."

I wish to request you kindly validate the tool and give your expert opinion for necessary modification. I will be grateful to you for this.

Thanking you

Yours sincerely,

Place : Salem

Date : **(Ms.S.Rajeswari)**

Enclosed:

1. Certificate of validation
2. Criteria checklist of evaluation of tool
3. Tool for collection of data
4. Procedure

ANNEXURE – D

TOOL

SECTION –A: BACKGROUND VARIABLE

Instruction to the participants

Dear Participant, this section requires some of the personal information and you are requested to answer each question correctly. The data given by you will be kept confidential.

I. Biographic variables

1. Age in years

a) 40- 50 [ ]

b) 51- 60 [ ]

c) 61-70 [ ]

2. Sex

a) Male [ ]

b) Female [ ]

3. Educational Status

a) No formal education [ ]

b) Primary school [ ]

c) High school [ ]

d) Higher secondary school [ ]

e) Diploma [ ]

f) Graduate [ ]

g) Post graduate [ ]

II. Socio-economic variables

4. Occupation

a) Unemployed [ ]

b) Daily wages [ ]

c) Business [ ]

d) Government employee [ ]

e) Private employee [ ]

III. Illness Related variables

5. Duration of Illness

a) 1 to 3 yrs [ ]

b) 4 to 6 yrs [ ]

c) 7 to 9 yrs [ ]

d) >9 yrs. [ ]

6. Duration of taking treatment?

a) Less than 1 year [ ]

b) 1- 3 years [ ]

c) 4 – 6 years [ ]

d) More than 6 years [ ]

7. Do you have family history of diabetes mellitus?

a) No family history [ ]

b) Primary relative [ ]

c) Secondary relative [ ]

IV. Personal variables

8. Dietary pattern

a) Vegetarian [ ]

b) Non vegetarian [ ]

9. Are you following diabetic diet?

a) Yes [ ]

b) No [ ]

SECTION – B: BLOOD GLUCOSE

1) Blood Glucose with Digital Glucometer

Definition

Digital glucometer is an instrument used to check the level of glucose in whole blood by using a needle and test strip and the result has been displayed on a digital screen.

Preparation of articles

- Soap and water
- Disposable gloves
- Needle
- Digital Glucometer
- Test Strips
- Spirit
- Cotton
- Puncture proof container

Procedure

- Explain the procedure to the patient
- Wash hands with soap and water
- Wear disposable gloves
- Turn on glucometer; place a strip in the glucometer into the slot given.
- Prepare the needle
- Swab the finger of patient with the spirit cotton on the area to draw the blood and let it dry.
- Prick the area, wipe the first drop of blood; massage the finger to help the blood rise to the surface.

- Place the strip against the droplet of blood from the finger and it will draw with in the test strip.
- Check for the saturation of blood in the test strip.
- Apply pressure to the puncture site using cotton.
- Wait for 5 seconds and read blood glucose result displayed on screen.

After Care

- Dispose off the needle in a puncture proof container
- Dispose off the used strip
- Keep the glucometer and strip container in a clean, dry place.
- Wash hands.
- Document the blood glucose reading.

Observation of Blood Sugar Level

Assessment of blood glucose was done by using digital glucometer. Digital Glucometer is a standardized electronic instrument to measure the level of glucose in blood. According to the reading of glucometer, the clients were classified into various classification of hyperglycemia. According to the classification the scores were given.

Table-3.1: Classification of hyperglycemia and score interpretation

Classification	Blood glucose value (mg/dl)	Score
Normal	70 – 110	0
Mild hyperglycemia	111 - 180	1
Moderate hyperglycemia	181 – 250	2
Severe hyperglycemia	251 – 320	3
Very severe hyperglycemia	Above 320	4

SECTION - C

PROCEDURE OF YOGASANA

Yogasanas are techniques to bring about very deep rest to different parts of body.

Suggested Asanas for Diabetes

1.	Pranayama	: 5 minutes
2.	Padhahasthasana	: 5 minutes
3.	Archa Chakrasana	: 5 minutes
	Relaxation	: 2 minutes
4.	Paschimotasana	: 5 minutes
5.	Ardha Matsyendrasana	: 5 minutes
	Relaxation	: 2 minutes
6.	Pavanamukthasana	: 5 minutes
	Relaxation	: 2 minutes
7.	Bhujangasana	: 5 minutes
8.	Shalabhasana	: 5 minutes
	Relaxation	: 2 minutes
9.	Savasana	: 10 minutes
	Relaxation	: 2 minutes

Effect of Asanas on blood sugar level

Yogic exercises cause the muscles to absorb the excess glucose in the blood, thereby reducing the blood sugar level. They help the pancreas and liver to function effectively, which regulates the blood sugar levels. Asanas help in rejuvenating the pancreatic cells, thereby assisting insulin secretion. The muscular movements also help in bringing down the blood sugar levels. Asanas induce relaxation, which also plays a key role in the healthy functioning of the internal organs of the body.

Pranayama

In this pranayama, the breath is retained outside for a longer duration that inhalation and exhalation. The ratio of inhalation, exhalation and retention is 3:6:12.

The following cooling pranayama is necessary before starting to do the yogasahan.

- Nadi chodhana
- Sheethali
- Sheethkari
- Sudhanatha

Steps

- Sit in a cross-legged position
- Inhale through the left nostril, by closing the right to the count of 3.
- Immediately exhale through the right nostril to the count of 6
- Retain the breath outside or in other words remain breathless to the count of 12.
- Repeat the pranayama with the same count from the right nostril.

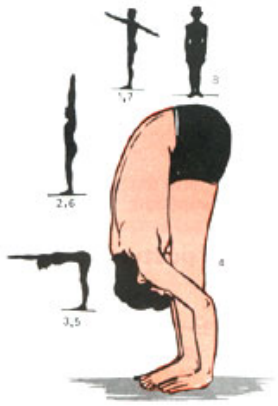
Benefit pranayama

- Cools your body and mine
- Reduce mental tension and stress
- Improves digestion
- Improves blood circulation to all the abdominal organ
- Improves the pancreatic function.

Standing position

1.Padhahastasana

Introduction



Padahastasana, or the standing forward bend (literally feet to hands pose), is the eleventh posture in the sequence of 12 basic postures of hatha yoga. It is an inverted posture which provides many of the same benefits of the seated.

Physical benefits

- Stretches the hamstrings on the back of the legs.
- Stretches and lengthens the entire spine
- Massages the internal organs, especially the digestive organs
- Relieve digestive problems such as constipation
- Relieves problems with sciatica
- Invigorates the nervous system
- Increases the supply of blood to the brain
- Removes flesh from the abdomen

Energetic (Pranic) benefits

- Removes tamas, or inertia

Technique

- To begin, come to a standing position at the front end of your mat with your legs lose together.
- Inhale and lift your arms straight up over your head with your arms touching your ears.

- Exhale and bend forward from the hops as shown in the photograph, keeping your back straight as long as possible. Keep your legs straight with the weight of the body over the balls of the feet. Feel that the hips are lifting up and the body is falling away from the hips.
- If possible, put your hands flat on the floor, or wrap your fingers around the big toes. If you can't reach the floor you can also wrap your hands around the back of your legs.
- Try to bring the head in as close to the knees as possible with neck relaxed.
- In the beginning, hold the posture for 5 seconds, gradually working upto 1 minute or more.
- To come out of the posture inhale and slowly roll the body up bringing the head up last.

2. Ardha Chakrasana

Technique

- Stand straight in samastithi. Keep your feet hip-width apart from each other. With inhalation you place your hands on your lower back just above your buttocks and bend backwords as much as your body allows you. Stay in this position and keep breathing. Come up with exhalation. You can repeat the posture 3 to 5 times.

Benefits of Ardha Chakrasana

- Ardha chakrasana is a beneficial yoga posture for your heart and can help you to regulate high blood pressure.
- As it gives your belly, abdominal organs and intestines a good stretch, it helps your digestion and makes your inner organs work properly again.

- The bend of the spine and the impulse that your nervous system gets is good for spondylitis.
- The bending backwards will bring flexibility to your spine and hips and when you have back pain your should do the posture to get some relief. Additionally the bending backwards gives you room to breathe and thus helps your respiratory system and can even relief asthma problems.
- If you want to lose some weight, do Ardha chakrasana as it tones and strengthens the thighs, hips and waist which will reduce excess fat in this area.
- Ardha chakrasana also helps women with menstruation problems or disorders and uterus problems or any other gynecological problems such as leucorrhea as the backward bending stimulates the ovaries and fallopian tubes.
- Pregnant women should also perform this exercise in most cases to prevent stiffness of the back and back pain. It can make the delivery easier. But please consult your doctor before you practice this posture during pregnancy.

3. Paschimotasana :-

Paschimotasana is a sitting asana also referred to as the “forward seated bend”. This asana is good for those suffering from diabetes. It is known to stimulate the functioning of the internal organs live liver, pancreas and kidney.

Benefits:

This asana has effects on the whole of the spinal cord, the complete nervous system and all the organs and glands of abdominal area including pancreas, adrenal, sex gland, etc.

For diabetic people it had great curative effect. It gives flexibility to the spine, restores, youth fullness, and act as a medicinal aid for backache and stomach troubles. Strengthen the sex gland and massages all the abdominal organs.

Steps

- ❖ Sit on a yoga mat in a comfortable position with legs outstretched in front.
- ❖ Bend your head to touch your knees and exhale completely.
- ❖ Grasp the toes with your fingers. Maintain this position for a few breaths and in hale when you return to the original position.
- ❖ Repeat this asana 2-3 times.

4. Artha matsyendrasana

Introduction

If the half spinal twist, in ninth in the sequence of 12 basic postures of hathayoga. There are many benefits to this posture, but the most important is that the entire length of the spine receives a lateral twist in both directions – foist to the left and then to the right.

Physical benefits

- Increase flexibility in each vertebrae of the spine, from the base of the spine through the neck.
- Stretches the back muscles and hips.
- Massages the abdominal organs, helping to relieve constipation.
- Breathing becomes more rapid, speeding up circulation and creating an aerobic effect.

Energetic benefit

- Helps rouse the Kundalini sakthi

Mental benefit

- Brings peace of mind
- Helps to cure nervous disorders

Technique

The half spinal twist begins from the child's pose resting position following the bow pose.

- From the child's pose, slowly roll your body up, bringing your head uplast. At this point you will be sitting on your heels.
- Droup your hips to the right of your feet so your sit bones are on the floor.
- Bring the left legs over the right so that the foot is on the right side of the right leg with the foot as close into the body as is comfortable. The closer into the body the left foot is the more difficult this posture is for people with very inflexible hips, the half spinal twist can be done with the right leg completely straight. Be sure to always use the same leg position on both sides of the body.
- Make sure that both sit bones are on the mat. If necessary move the right ankle away from the hips until you can feel both sit bones squarely on the surface of the mat.
- Bring your left hand behind you and rest it on the floor.
- Inhale and lift your right am straight up over your head, stretching the spine upwards.
- Exhale and turn the body to the body to the left bring the right arm outside the left knee. Look over the left shoulder.
- Keep your spine straight and be sure to keep the lot of the body mainly on the spine and not on the harm. More advance students can actually lift the left arm from the floor, wrapping it around the back.

- In the beginning it is not necessary to be able to hold on to your left ankle with your right hand. It is okay to leave your right arm straight from the knee, always working to move it close into the left ankle. You can also use your right hand to pull against your knee on call of the opposite leg.
- Make sure the shoulders stay parallel to the floor.
- Try to make this an active posture, twisting the body a little bit more to the left on every exhale.
- Be sure not to hold extra tension in the hips, shoulders and face, relaxing into the posture as much as possible to get a good twist. You should feel an equal stretch in every vertebral of the spine.
- Holding this posture for 30 seconds to being with working upto 2 minutes or more.

To come out of the posture in hale and lift the right arm over your head, stretch up and exhale and release the hand back down to the mat.

The half spinal twist continues by twisting the opposite direction.

Supine Position

5. Pavanamukthasana

Pavanamukthasana is performed in supine position. It is very essential for diabetic patients.

Technique

- Lie down on the floor with the face upward. Bend both the knees and warp the hands around the legs as shown in the posture.
- Ensure that the hands are locked with the support of fingers.

- Exhale slowly, raise the head forward till the forehead is in between the knees. The thighs should be pressed against the stomach.
- Inhale bring the forehead near the knees. Repeat the process for about 10 times.
- Inhale deeply and gradually lower the head and relax.
- This exercise is performed on each side, wherein each thigh presses against the stomach in Ekapada pavanamukthasana.

Advantages

- The therapeutic advantages of Ekada pavanamukthasana and Dwipada pavanamukthasana are more or less same.
- This is an effective exercise to cure constipation and digestive disorders. It cures indigestion and promotes digestive function.
- In this exercise abdominal region is exercised very well and all the abdominal diseases are cured.
- It cures gastric trouble and also those suffering from piles get relief.

Prone position

6. Shalabhasana (Back bend)

This asana helps to cure acidity. It is also known to relieve nervous tension and indigestion.

Steps

- Lie on the floor with the abdomen touching the mat.
- Rest your chin on the floor with arms at the sides. The heels and toes must be held together.
- In hale and lift both legs above the floor. While lifting the legs, pressure must be applied on the fists.

- Maintain this position for a few seconds and come back to the original position.
- Relax and feel the stretch on the muscles of the back.

Benefits

- Strengthen spine and chest, it improves spinal flexibility.

7. Bhujangasana (Cobra pose)

Bhujangasana may strengthen the spine stretch the chest, shoulders, and abdomen, firm the buttocks, and relieve stress and fatigue. Traditional texts say that bhujangasana increases body heat, destroys disease, and awakens kundalini.

Common postural errors during this pose include over arching the neck and lower bank. One recommendation is to keep the gaze directed down at the floor and focus on bringing movement into the area between the shoulder blades (the thoracic area, or middle back).

Relaxation Technique

8. Savasana

Steps

- Lying down in a comfortable position and close your eyes.
- Mentally chant akara, makara, omkara and concentrate on the sound. Thoughts would rush in endlessly, but attention should be focused on the chant.
- Do this till a feeling of peace envelopes you.

Benefits

- It lowers oxygen consumption
- It decreases blood flow and slows the heart rate.
- Increases exercise tolerance
- Increase creativity
- Increased brain wave coherence
- Improved learning ability and memory
- Provides peace of mind, happiness
- Helps you discover your purpose
- Increased self actualization.

பிரிவு- அ

அடிப்படை விபரங்களை அறியும் நேர்காணல் படிவம்

அன்பார்ந்த பங்கேற்பாளர்களே, இந்த பகுதி தனிநபர் பற்றிய விபரங்களைக் கொண்டுள்ளது. தங்களைப் பற்றிய சரியான விபரங்களை தெரிவிக்க வேண்டுகிறேன். தங்களைப் பற்றிய விபரங்கள் பத்திரமாக பாதுகாக்கப்படும்.

பங்கேற்பவர் எண்:

தேதி:

அடிப்படை காரணிகள்

1. வயது (வருடங்களில்)

   அ) 40- 50 [ ]

   ஆ) 51 - 60 [ ]

   இ) 61 - 70 [ ]

2. பாலினம்

   அ) ஆண் [ ]

   ஆ) பெண் [ ]

3. கல்வித்தகுதி

   அ) முறையான கல்வி பயிலாதவர் [ ]

   ஆ) துவக்க கல்வி [ ]

   இ) உயர்நிலைக்கல்வி [ ]

   ஈ) மேல்நிலைக்கல்வி [ ]

   உ) பட்டயப்படிப்பு [ ]

   ஊ) இளநிலை படட்டதாரி [ ]

   எ) முதுநிலை பட்டதாரி [ ]

ஆ. சமூக வருமான காரணிகள்

4. தொழில்

அ) வேலையில்லாதவர் [ ]

ஆ) தினக்கூலி [ ]

இ) சுயதொழில் [ ]

ஈ) அரசு பணியாளர் [ ]

ஈ) தனியார்துறை பணியாளர் [ ]

இ. நோய் சம்பந்தமான காரணிகள்

5. நீரழிவு நோயால் பாதிக்கப்பட்டுள்ள காலம்

அ) 1-3 வருடங்களாக [ ]

ஆ) 4-6 வருடங்களாக [ ]

இ) 7-9 வருடங்களாக [ ]

ஈ) 9 வருடங்களுக்கு மேலாக [ ]

6. எவ்வளவு காலமாக நீரழிவு நோய்க்கான மருத்துவ சிகிச்சை எடுத்துக்கொண்டு உள்ளீர்கள்?

அ) 1 வருடத்திற்கு குறைவாக [ ]

ஆ) 1 - 3 வருடங்கள் [ ]

இ) 4 - 6 வருடங்கள் [ ]

ஈ) 6 வருடங்களுக்கு மேல் [ ]

7. உங்கள் குடும்பத்தில் எவருக்கேனும் நீரழிவு நோய் உள்ளதா?

அ) இல்லை [ ]

ஆ) முதலாம் நிலை உறவினர் [ ]

இ) இரண்டாம் நிலை உறவினர் [ ]

ஈ. சுயகாரணிகள்

8. உணவுமுறை

அ) சைவம் [ ]

ஆ) அசைவம் [ ]

9. நீங்கள் நீரழிவு நோய்க்கான உணவுமுறையை பின்பற்றுபவரா?

அ) ஆம் [ ]

ஆ) இல்லை [ ]

பிரிவு - ஆ

யோகா பயிற்சி

யோகாசனம் என்பது ஆழ்ந்த நிலையில் உடலின் எல்லா பாகங்களையும் தளர்த்துவதற்கான பயிற்சி ஆகும்.

நீரழிவு நோய்க்கான யோகாசனங்கள்

பிராணாயாமம்

1.	பிராணாயாமம்	: 5 நிமிடங்கள்
2.	பாதஹஸ்தாசனம்	: 5 நிமிடங்கள்
3.	அர்த்தசக்கராசனம்	: 5 நிமிடங்கள்
	ஓய்வு	: 2 நிமிடங்கள்
4.	பஸ்சிமதானாசனம்	: 5 நிமிடங்கள்
5.	அர்த்த மத்ஸ்யேந்திராசனம்	: 5 நிமிடங்கள்
	ஓய்வு	: 2 நிமிடங்கள்
6.	பவன முக்தாஸனம்	: 5 நிமிடங்கள்
	ஓய்வு	: 2 நிமிடங்கள்
7.	புஜங்காசனம்	: 5 நிமிடங்கள்
8.	சலபாசனம்	: 5 நிமிடங்கள்
	ஓய்வு	: 2 நிமிடங்கள்
9.	சவாசனம்	: 10 நிமிடங்கள்
	ஓய்வு	: 2 நிமிடங்கள்

பிராணாயாமம்

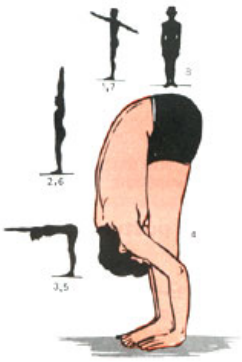
இது உடலை குளிர்விப்பதற்காக செய்யக்கூடிய பயிற்சி முறை இது மற்ற ஆசனங்களை செய்வதற்கு முன்பாக செய்யவேண்டும்.

- சந்திரபேதனா
- சீதலி
- சீத்காரி
- ஸதந்த்தா

பயன்கள்

- இவை குளிர்ச்சியூட்டும் பிராணாயாமங்கள்
- இவை மனதை அமைதியுறச் செய்து மனக்கவலை, இறுக்கம் ஆகியவற்றை போக்குகிறது.

1. பாதஹஸ்தாசனம்



- முதுகு ஒரே நேர்கோட்டில் இருக்குமாறு நேராக நிற்கவும். குதிகால்கள் இரண்டும் இணைந்திருக்க - கால்வில்களுக்கிடையே சிறிது இடைவெளி விட்டு நிற்கவும். மார்பை விரித்து தோள்பட்டையை தளர்வாகத் தொங்கவிடவும். கழுத்து நேராக இருக்கட்டும். கை விரல்கள் இணைந்து கீழ்நோக்கி நீட்டியிருக்கட்டும். உள்ளங்கைகளைத் தொடைகளை ஒட்டிப் பக்கவாட்டில் வைக்கவும். முகம் அமைதியாக இருக்கட்டும்.
- மூச்சை உள்ளிழுத்துக்கொண்டே இருகைகளையும் பக்கவாட்டில் தோள் மட்டத்திற்கு உயர்த்தவும். உள்ளங்கைகள் தரையை நோக்கி இருக்கட்டும்.
- கைகள் இரண்டையும் தலைக்குமேல் உயர்த்தி, புஜங்களை, காதுகளை ஒட்டி வைத்துக் கொள்ளவும். உள்ளங்கைகள் முன்னோக்கி இருக்கட்டும். உள்மூச்சைத் தொடர்ந்து இழுத்துக் கொண்டே உடம்மை முதுகெலும்பின் அடிப்பாகத்திலிருந்து நீட்டவும்.
- மூச்சை வெளிவிட்டுக் கொண்டே முன்னோக்கி உடம்பு கிடை மட்டமாக, தரைக்கு இணையாக இருக்கும்வரை வளைக்கவும்.

- மூச்சை முழுதும் வெளிவிட்டுக்கொண்டே, உடம்பை மேலும் கீழ்நோக்கி வளைத்து நெற்றி முழங்காலைத் தொட, கைகளைப் பாதங்களுக்குப் பக்கவாட்டில் வைக்கவும். இதுதான் ஆசனத்தின் உச்சநிலை, சுவாசம் சாதாரணமாக இருக்கட்டும்.
- மூச்சை உள்ளிழுத்துக் கொண்டே தலையைக் கைகளோடு சேர்த்து முதுகெலும்பின் அடிப்பாகத்திலிருந்து தரைக்கு இணையாக உயர்த்தவும்.
- தொடர்ந்து மூச்சை உள்ளிழுத்துக் கொண்டே உடம்பைக் கைகளோடு சேர்த்து, நிமிர்த்தி நேரான நிலைக்குக் கொண்டு வரவும்.
- மூச்சை வெளிவிட்டுக் கொண்டே கைகளை பக்கவாட்டில் தோளுக்கு இணையாக இறக்கவும்.
- கைகளைக் கீழே ஸ்திதி நிலைக்குக் கொண்டு வந்து மூச்சை முழுவதுமாக வெளிவிடவும்.

பயன்கள்

- **உடல்ரீதியான பலன்கள்:** உடம்பின் பின்புறம் உள்ள எல்லாத் தசைகள், இடுப்பு நரம்பு, தொடையில் உள்ள எலும்பைப் பிணைக்கும் தசைநார்கள், தசையைப் பிணைக்கும் தசை நார்கள், கால்கள் ஆகியவை நன்றாக நீட்டப்படுகின்றன.
- முதுகுத்தண்டு மற்றும் இடுப்பில் உள்ள நரம்புகள் முறுக்கேறுகின்றன.
- தலைக்குச் செல்லும் இரத்த ஓட்டம் அதிகரிக்கிறது.
- ஜீரண சுரப்பிகள் நன்கு சுரக்கின்றன
- உடலின் சுற்றளவைக் குறைத்து, இடுப்பு மற்றும் இடுப்புக்குக் கீழுள்ள பகுதியை மெலிய வைக்கிறது.

சுவாசிக்கும் முறை

- முன்னே குனியும்போதெல்லாம் மூச்சை வெளிவிட்டு, மேலே நிமிரும்போது மூச்சை உள்ளிழுக்கவும், உச்சநிலையில் சுவாசம் சாதாரணமாக இருக்கட்டும்.

2. அர்த்தசக்கராசனம்

- முதுகை நேர்கோடு போல் வைத்து நேராக நிற்கவும். குதிகால்கள் இணைந்திருக்க பாதவிரல்கள் சிறிது விலகியிருக்கவேண்டும். மார்பை விரித்துக் தோள்பட்டையைத் தளர்வாகத் தொங்கவிடவும். கழுத்து நேராக இருக்கவேண்டும். கைவிரல்கள் இணைந்து கீழ்நோக்கியிருக்க வேண்டும்.
- உள்ளங்கைகள் இருபக்க வாட்டிலும் தொடையை ஒட்டி இருக்கவேண்டும். முகம் அமைதியாக இருக்கட்டும்.
- மூச்சை வெளிவிட்டுக் கொண்டே இரு உள்ளங்கைகளினாலும் இடுப்பின் பின்புறத்தைத் தாங்கிப் பிடிக்கவும்.
- இடுப்பிலிருந்து பின்னால் வளையவும். கழுத்து பின்னால் வளைந்து கழுத்துப்புறத் தசைகள் இழுக்கப்படுகின்றன. வளையும் போது மூச்சை உள்ளிழுக்கவும். இது தான் ஆசனத்தின் உச்சநிலை, சுவாசம் சாதாரணமாக இருக்கட்டும்.
- மூச்சை வெளிவிட்டுக் கொண்டே நேரான நிலைக்கு வரவும். உள்ளங்கைகள் இடுப்பைத் தாங்கிப் பிடித்திருக்கவேண்டும்.
- மூச்சை வெளிவிட்டு கொண்டே கைகளை விடுவிக்கவும்.

பயன்கள்

- **உடல்ரீதியான பலன்கள்:** உடம்பின் முன்புறத்தசைகள், கெண்டைக்கால் தசைகள், இடுப்பு, விலாப்பகுதிகளில் உள்ள தசைகள் முறுக்கேறுகின்றன.

- முதுகுத்தண்டின் வளைந்து கொடுக்கும் தன்மை நீடிக்கிறது.
- சுவாச உறுப்புகள் ஓய்வடைகின்றன.

3. பஸ்திமதானாசனம்

- நேராக நிமிர்ந்து உட்கார்ந்து கால்களை நீட்டவும். பாதங்கள் இணைந்திருக்க உள்ளங்கைகள் புட்டத்துக்கு இரு பக்கவாட்டிலும் தரையில் ஊன்றப்படுகிறது.

- கைகளைப் பக்கவாட்டில் தோளுக்கு இணையாக முழங்கை வளையாமல் நீட்டவும். உள்ளங்கைகள் கீழ்நோக்கி இருக்கட்டும்.
- கைகளை உயர்த்தி, புஜங்கள் முறையே காதுகளைத் தொடுமாறு செய்யவும். உள்ளங்கைகள் முன்னோக்கி இருக்கட்டும்.
- இடுப்பிலிருந்து கைகளோடு சேர்த்து முன்னால் குனியவும். கைகள் தரைக்கு இணையாக இருக்கட்டும். மணிக்கட்டுகள் கால் விரல்களுக்கு மேலாக இருத்தல் வேண்டும்.
- ஆள்காட்டி விரல்களைக் கொக்கிபோல் வளைந்து, முறையே இருகால் பெருவிரலைப் பிடிக்கவும். இன்னும் முன்னால் குனிந்து முகத்தை முழங்காலின் மேல் வைக்கவும்.
- விரல்களை விடுவித்து, தரைக்கு இணையாக மேலே வரவும்.
- நேராக நிமிர்ந்து இரண்டாம் நிலைக்கு வரவும்.
- கைகளை கீழே பக்கவாட்டில் ஒன்றாம் நிலையில் இருப்பது போல் கொண்டு வரவும்.
- உள்ளங்கைகளைத் தரையில் ஊன்றி ஸ்திதி நிலைக்கு வரவும்.

பயன்கள்

- உடம்பின் பின்புறம் முழுவதும் உள்ள மற்றும் வயிற்றின் முன்பகுதியில் உள்ள தகைகள் நன்கு இழுக்கப்பட்டு வலுவடைகின்றன.
- இடுப்புப் பகுதியிலுள்ள நரம்புகள் உரம் பெறுகின்றன.
- உடல் பொதுவாக மெலிந்து நல்ல வடிவமைப்பைப் பெறுகிறது.
- கல்லீரல், கணையம், குடல் இவற்றின் ஜீரண சக்தி தூண்டப்படுகிறது.
- இவற்றின் சக்தி வளரும் வயதினரின் உயரத்தைக் கூட்டுவதில் துணைபுரிகிறது.

4. அர்த்த மத்ஸ்யேந்திராசனம்

- நேராக நிமிர்ந்து உட்கார்ந்து கால்களை நீட்டவும். பாதங்கள் இணைந்திருக்க, உள்ளங்கைகள் புட்டத்தின் இருபக்கவாட்டிலும் தரையின் மீது ஊன்றியிருக்கட்டும்.

- வலது காலை மடக்கி குதிகாலை இறுக்கமாகத் தொடையின் கீழ்பாகத்தில் வைத்துக் கொள்ளவும்.
- இடது பாதத்தை வலது தொடையின் வலது பக்கத்தில் முழங்காலுக்கருகில் வைக்கவும்.
- பலது கையை மார்புக்கும் இடது முழங்காலுக்கும் ஊடாகச் செலுத்தி இடது முழங்காலின் வெளிப்புறமாகக் கையைச் சுற்றிச் சென்று இடது காலின் பெருவிரலைப் பிடித்துக் கொள்ளவும். வலது தோள்பட்டை எலும்பு இடது முழங்காலின் வெளிப்புறப்பகுதி மீது பதிந்திருக்கட்டும்.
- இடதுகை முதுகைச் சுற்றிச் சென்று வலது தொடையைத் தொட முயற்சிக்கட்டும். பார்வை இடது தோளின் மீதாக இருக்கட்டும். (நிமிர்ந்த

முழங்கால், முதுகுத்தண்டு அதிக அளவு சுழலுவதற்கான ஆதாரமாக இருக்கிறது) உடம்பு நிமிர்ந்திருக்கட்டும்.

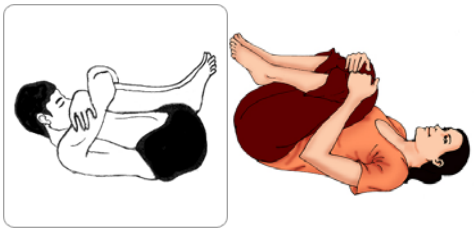
- இடது கையை விடுவித்து 3-ம் நிலைக்கு வரவும்.
- மெதுவாக முழங்காலை வெளிப்புறம் சுற்றியுள்ள வலது கையை விடுவித்து இரண்டாம் நிலைக்கு வரவும்.
- இடது காலை விடுவித்து முதல் நிலைக்கு வரவும்.
- வலது காலை விடுவித்து ஸ்திதி நிலைக்கு திரும்பவும்.

பயன்கள்

- சுழற்றுதல் முதுகெலும்பு முழவதையும் நீட்சியடையச் செய்து உரமேற்றுகிறது.
- கீழ்முதுகின் வளையுந்தன்மை அதிகரிக்கிறது.
- முதுகுத்தண்டு நரம்பின் ஆரோக்கியம் பாதுகாக்கப்படுகிறது.
- கல்லீரல், மண்ணீரல், கணையம், குடல்கள், மூத்திரப்பை ஆகியவை நன்கு அழுத்தப்படுகின்றன.
- பாலணுக்கள் உற்பத்தி செய்யும் சுரப்பிகள் தூண்டப்படுகின்றன.
- கணையநீர், அட்ரினலின் முதலியவை நன்கு சுரக்கின்றன.
- நீரழிவு, சிறுநீரகக் கோளாறுகள், விரிவடைந்த அல்லது சுருங்கிய கல்லீரல், மண்ணீரல், முதுகுத்தசையில் ஏற்படும் வலி, இடுப்பு மூட்டில் ஏற்படும் வலி, உடல் பருமன், ஜீரணக்கோளாறு ஆகியவற்றுக்கு நல்லது.

5. பவன முக்தாஸனம்

முறை-1



- ஸ்திதி: மொத்தமான ஒரு விரிப்பின் மீது மல்லாந்து படுக்கவும். கால்களை இணைந்து கைகள் தலைக்கு மேல் நீட்டிக் கொண்டிருக்கட்டும்.

- ஸ்திதி என்பது பயிற்சியை ஆரம்பிப்பதற்கு முன் இருக்க வேண்டிய நிலையைக் குறிக்கும்.
    1. வலது காலை மட்டும் மடக்காமல் தரையிலிருந்து 45^0 உயரத்திற்கு உயர்த்தவும். இடது காலைத் தரையின் மீது உறுதியாக வைத்துக் கொண்டு பாதி உள் சுவாசம் வாங்கவும்.
    2. வலது காலைத் தரைக்குச் செங்குத்தாக உயர்த்திக் கொண்டே முழு சுவாசத்தையும் வாங்கிக் கொள்ளவும்.
    3. வலது காலை மடித்து மார்பின் மீது வைத்து கைவிரல்களைக் கோர்த்து காலை அழுத்திப் பிடிக்கவும். மூச்சை வெளிவிடவும்.
    4. முகவாயை (chin) வலது முழங்காலுக்கு மேல் வைத்துக் கொள்ளவும். இப்பொழுது இடது காலை வலப்பக்கம் 5 முறை, இடப்பக்கம் 5 முறையாக வளையம் போல் சுற்றவும். சுவாசம் சாதாரணமாக இருக்கட்டும்.
- நிலை 5, 6 என காலை விடுவித்து 8-வது நிலையில் ஸ்திதிக்குத் திரும்பவும்.
- இதே போன்று இடது காலைக் கொண்டும் செய்யவும்.

முறை-2

ஸ்திதி நிலையிலிருந்து ஆரம்பிக்கவும்

- இரு கால்களையும் 45^0க்கு உயர்த்தவும். முழங்கால்கள் நேராக நீட்டிக் கொண்டிருக்கவேண்டும். மூச்சை மெதுவாக உள்ளிழுக்கவும்.
- கால்களைத் தரைக்குச் செங்குத்தாக வைக்கவும். முழுமூச்சையும் உள்வாங்கிக் கொள்ளவும்.
- முழங்கால்களை மடித்து ஒன்றோடொன்று கோர்த்து கைவிரல்களால் கால்களை மார்போடு சேர்த்துப் பிடித்துக் கொள்ளவும். மூச்கை வெளிவிடவும்.
- (அ) முகவாயை முழங்கால்களுக்கு மேலாக வைத்துக் கொள்ளவும். வலது முழங்கை தரையைத் தொடுமாறு வலதுபக்கமாக உடம்பை உருட்டவும். பின்

இடது முழங்கை தரையைத் தொடுமாறு இடது புறமாக உடம்பை உருட்டவும். இதே விதமாக 5 முறை செய்யவும்.

(ஆ) உடம்பு முன்னும் பின்னும் ஊசலாடுமாறு 5 முறை செய்யவும். சாதாரணமான சுவாசம் கொள்க.

- பின் 5-ஆம் நிலை 6-ஆம் நிலை என்று கை கால்களை விடுவித்து 8-ஆம் நிலையில் ஸ்திதிக்குத் திரும்பவும்.
- பவனமுக்தாசன நிலையிலிருந்த உடலை அசைத்துச் செய்யும் பயிற்சியால் வாயுத்தொல்லை அகன்று ஜீரண சக்தி அதிகரிக்கிறது. மலச்சிக்கல் குணமாகிறது.

6. புஜங்காசனம்

புஜங்க என்றால் பாம்பு. இந்த ஆசனத்தின் உச்சநிலை பாம்பு தலையை உயர்த்தியது போன்று தோற்றமளிக்கிறது.

- குப்புறப்படுத்துக் கைகளைத் தலைக்கு மேலாக நேராக நீட்டவும். உள்ளங்கைகள் தரையின் மீது இருக்கட்டும். முகவாயைத் தரையின் மீது வைத்துக் கொள்ளவும், கால்களை இணைத்து வைத்துக் கொண்டு உள்ளங்கால்கள் மேல்நோக்கி இருக்குமாறு நீட்டவும். தலை முதல் கால் வரை உடல் ஒரே நேர்கோட்டில் இருக்கவேண்டும்.
- இரண்டு முழங்கைகளையும் மடித்து உள்ளங்கைகளை, கடைசி விலா எலும்புகளுக்கு இருபக்கவாட்டிலும் ஊன்றவும்.
- மெதுவாகத் தலையை நிமிர்த்தி, பின் மார்பையும் உயர்த்தவும். உடம்பின் எடை இடுப்பின் மீது இருப்பதை உணரவும்.
- மார்பையும், தலையையும் கீழே கொண்டு வந்து, தரையைத் தொடவும்.

- கைகளை விடுவித்துத் தலைக்கு மேல் தரையின் மீது நீட்டவும். அதாவது ஸ்திதி நிலைக்கு வரவும்.

பயன்கள்

- மேற்புற முதுகெலும்பு வளைந்து கொடுக்கும் தன்மையுடையதாகவும், உறுதியானதாகவும் ஆகிறது.
- மார்புத்தசைகள், முதுகுத்தண்டு நரம்புகளும் ஊக்கமடைகின்றன.

7. சலபாசனம்

சலப என்றால் வெட்டுக்கிளி. இது ஒரு பூச்சியின் பெயர். உச்சநிலையில் உடல் ஒரு வெட்டுக்கிளி போன்று தோற்றமளிக்கிறது.

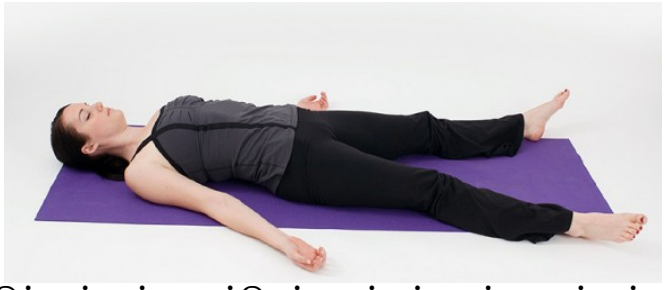
- தரையின் மீது குப்பறப்படுத்து கைகளைத் தலைக்கு மேல் நீட்டி உள்ளங்கைகளை தரையின் மீது வைக்கவேண்டும். முகவாய் தரையைத் தொட்டுக் கொண்டிருக்கவேண்டும். கால்கள் இணைந்து உள்ளங்கால்கள் மேல் நோக்கியிருக்கவும். தலை முதல் கால் வரை உடல் ஒரே நேர்கோட்டில் அமைதல் வேண்டும்.
- கை முஷ்டியை மடித்து, தொடை இடுப்பில் சேரும் இடத்திற்கு அடியில் வைத்துக் கொள்ளவும்.
- இடுப்பிலிருந்து இரண்டு கால்களையும் இணைத்தவாறு மேலே தூக்கவும்.
- 1-ஆம் நிலைக்கு திரும்பவும்.
- ஸ்திதி நிலைக்குத் திரும்பவும்

பயன்கள்

- புஜங்காசனத்தின் பலன்களை இது பூர்த்தி செய்கிறது.
- இடுப்பு, முதுகின் கீழ்ப்பகுதி, இடுப்பெலும்புக்கூட்டு, வயிறு, தொடை, சிறுநீரகம், கால்கள் ஆகியவை ஊக்கமடைகின்றன.

- கணையம் நன்கு செயல்படுகிறது.
- மலச்சிக்கல், வாயுத்தொல்லை, நீரழிவு, இடுப்பு வாயுப்பிடிப்பு ஆகியவற்றை நீக்குகிறது.

சவாசனம்



சவ என்றால் சவம். உச்சநிலையில் ஒரு சவம் போன்று தோன்றுகிறது. இந்த ஆசனம் ஒருவர் உள்ளேயும் வெளியேயும் ஏற்படும் எல்லாத் தூண்டுதல்களுக்கும் ஆட்படாமல் எந்த எதிர்ச்செயலுமின்றி சவம்போல் ஆகவேண்டும் என்பதைக் குறிக்கிறது.

- தரையின் மீது சவம் போல் படுத்துக் கொள்ளவும். கால்களையும், கைகளையும் உடலைவிட்டுத் தள்ளி அகற்றி வைத்துக் கொள்ளவும். உடலின் எல்லா பாகங்களையும் மிக வசதியாகக் கிடத்திக் கொள்ளவும். இது பயிற்சி செய்பவரைப் பொறுத்து வேறுபடுகிறது. இந்த ஆசனத்தின் நோக்கம் உடலின் எல்லாப் பாகங்களையும், உள்ளுறுப்புகளையும் முறையாகத் தளர்த்துதலாகும். ஆசனத்தின் முதிர்ந்து நிலையில் ஒருவரால் மனதின் இறுக்கங்களையும், அழுத்தங்களையும் சமன் செய்யமுடியும். மேலும் இதனைப் பயிற்சி செய்வது, மிக உயர்ந்த மன ஒருமைப்பாட்டிற்கும், தியானத்திற்கும் வழி வகுக்கிறது. ஆரம்ப நிலையில் ஒரு வழிகாட்டியின் துணையோடு உடலைத் தளர்த்தப் பயிலவும்.

பயன்கள்

- உடல் முழுவதையும் உறுதிப்படுத்தி ஊக்கமளிக்கிறது.
- எல்லாத் தசைகளும், மூட்டுகளும் தளர்த்தப்படுகின்றன.

ANNEXURE – E

CERTIFICATE OF VALIDATION

This is to certify that the tool developed by **Mrs.S.Rajeswari** Final year M.Sc. Nursing student of Sri Gokulam College of Nursing, Salem (affiliated to Dr. M.G.R. Medical University) is validated and can proceed with this tool and content for the main study entitled **"A Study To Evaluate The Effectiveness Of Yogaasana On Blood Glucose Level Among Clients With Type II Diabetes Mellitus At Selected Community, Salem."**

Signature with Date

ANNEXURE - F

LIST OF EXPERTS FOR CONTENT VALIDITY

1. **Dr. G.Prakash, M.D.,**
   Consultant community medicine
   Sri Gokulam Hospital,
   Salem.

2. **Dr. K. Alagiyanambi, M.D.,**
   Consultant Diabetalogist,
   Sri Gokulam Hospital,
   Salem.

3. **Dr.A.M.Sudhakar**
   Medical consultant,
   Govt.primary health centre
   Namakkal

4. **Mrs. Amutha, M.Sc.(N),**
   Professor,
   Community Health Nursing,
   Dhanvanthiri College of Nursing,
   Erode.

5. **Mrs. B. Sumathi, M.Sc.(N),**
   Associate Professor,
   Medical Surgical Nursing,
   Sri Gokulam college of nursing,
   Salem.

6. **Mrs. Sumathi, M.Sc.(N),**
   HOD of Community Health Nursing,
   Vinayaka Mission Annapoorna College of Nursing,
   Salem.

7. **Mrs.Malathy, M.Sc.(N),**
   Associate Professor,
   Community Health Nursing,
   Vinayaka Mission Annapoorna College of Nursing,
   Salem.

8. **Mrs.Lakshmi Prabha, M.Sc.(N),**
   Associate Professor,
   Community Health Nursing,
   Vinayaka Mission Annapoorna College of Nursing,
   Salem.

ANNEXURE - G

TRAINING CERTIFICATE

AISHWARYAM NATURE CURE HOSPITAL
& YOGA CENTRE

(Aishwarayam Health & Educational Trust)

5/148-A, State Bank officer's Colony, Salem - 636 004. Mobile : 98657 12057

Tel : 0427 - 2331133, E-mail : aishwaryamhospital@gmail.com

Dr. A.M. Sudhakar, B.N.Y.S., Dr. Sujatha Sudhakar, B.N.Y.S.,

Date : 10/06/2011

CERTIFICATE OF TRAINING

TO WHOMSOEVER IT MAY CONCERN

I hereby certify that Mrs.S.Rajeshwari, MSc (N) Final Year Student, Sri Gokulam College Of Nursing, Salem, has undergone training on Yogasanas for Diabetic and she is eligible to perform Yogasana for Diabetic patients.

Signature: 10/06/2011

PROPRIETOR

Seal: Aishwaryam Nature. Cure Hospital
State Bank Officer's Colony
SALEM - 636 004.

" Nature Cure Detoxify the Body
Yoga Detoxify the Mind "

ANNEXURE -H

CERTIFICATE OF EDITING

Certified that the dissertation paper titled **A Study To Evaluate The Effectiveness Of Yogaasana On Blood Glucose Level Among Clients With Type II Diabetes Mellitus At Selected Community, Salem."** by **Mrs.Rajeswari** has been checked for accuracy and correctness of English language usage, and that the language used in presenting the paper is lucid, unambiguous, free of grammatical / spelling errors and apt for the purpose.

Date : 12/01/2012

Signature:

Name and designation: K.Kuppusamy
Block Resource Teacher Educator

க. குப்புசாமி, M.A., M.Ed.(Engl).
ஆசிரியர் பயிற்றுநர் (BRTE),
வட்டார வள மையம், இ.கோரி

ANNEXURE - I

PHOTOS

INVESTIGATOR COLLECTING BACKGROUND DATA

TESTING OF BLOOD GLUCOSE LEVEL

DEMONSTRATION OF YOGAASANA